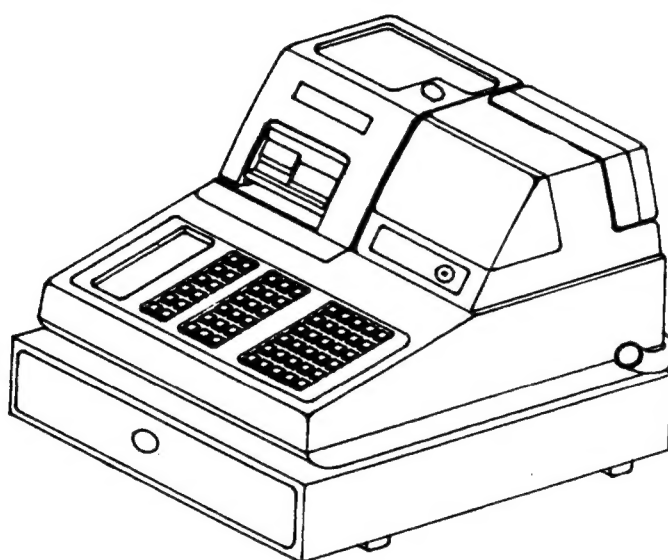


SERVICE MANUAL

ELECTRONIC CASH REGISTER ER — 3715/3615 SERIES



SPECIFICATION

ITEM	SPECIFICATION	ITEM	SPECIFICATION
POWER	AC 120V 60Hz, 230V 50Hz	DRAWER	4B/8C, 5B/5C
RATING	34W MAX	DIMENSION	450(L)X400(W)X309(H)mm
PRINTER	CR-802A/812A	WEIGHT	14.9Kg
DISPLAY	FRONT(10), REAR(9)		

Design and specifications are subject to change without notice.

★★ TABLE OF CONTENTS ★★

1. SYSTEM INSTALLATION	
1-1 START UP INSTRUCTIONS	3 - 8
1-2 GENERAL WARNING	9
1-3 TRANSFORMER AND FUSE SPECIFICATION	9
2. CIRCUITRY	
2-1 POWER CIRCUIT	10
2-2 BATTERY CIRCUIT	11
2-3 RESET AND POWER FAIL DETECTION CIRCUIT	11
2-4 DISPLAY CIRCUIT	12
2-5 DRAWER AND BUZZER CIRCUIT	12
2-6 KEYBOARD CIRCUIT	13
2-7 REAL TIME CLOCK CIRCUIT	14
2-8 PRINTER CIRCUIT	15
3. SPECIFICATION OF MAJOR COMPONENT	
3-1 CPU-PORT DESCRIPTION	16
3-2 CR-802A/CR-812A PRINTER	17
3-3 F.P.C. TERMINAL ARRANGEMENT	18
3-4 GENERAL SPECIFICATIONS	
KA2657, LM339, 74HCT138	19
74HCT573, 74HCT574, 74HCT541, IR2C05	20
SRAM 62256, SRAM 6264, EPROM 27C512	21
DIGITRON FG97D6/FG1010RB6	22
4. GENERAL OVERVIEW	
SYSTEM BLOCK DIAGRAM	23
MAIN PCB LAYOUT	24
DISASSEMBLY MAIN PCB	25
CIRCUIT DIAGRAM	26
5. SERVICE PARTS LIST	
MAIN PART	28-30
EXPLODED VIEW	31
ASSY KEY-BOARD	32-34
DRAWER	35-37
PRINTER	38-41

WARNING (US ONLY)

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

SYSTEM OVERVIEW

This ELECTRONIC CASH REGISTER is the microprocessor based system, using an 8-bit single chip microprocessor.

This service manual provides technical information for many individual component systems, circuit and gives an analysis of the operations performed by the circuits.

Also included is technical information on the EPSON two station printers used in this machine.

If you need more technical service, please call our service branch.

Schematic and specifications provide needed information for the accurate trouble-shooting.

All information in this manual is subject to change without prior notice. Therefore you must check the correspondence of your manual with your machine.

No part of this manual may be copied or reproduced in any form or by any means without the prior written consent of ours.

	MODEL	KEYBOARD	PRINTER	SRAM	TRANS
U.S.A.	ER-3715	MAX 60	CR-802A	6264	120V 60Hz
	4715	60	812A	62256	
	3740	90	812A	62256	
	4100	160	802A	62256	
EUROPE	ER-3610	60	812A	62256	230V 50Hz
	3615	60	812A	62256	
	3640	90	812A	62256	

Note: When first configuring these ECR, it's recommended that the register remain powered on in the "REG" mode for at least twenty-four hours. This allows the Ni-Cad battery, which maintains the memory of the machine while the power is off, to charge completely.

1. SYSTEM INSTALLATION

1-1 START UP INSTRUCTIONS

STEP 1 Initial Clear

The Samsung ER-3715/3615(3715/4715/3740/4100,3615/3640) Series may be Initial Cleared at any time. The Initial Clear procedure may be used to clear keyboard lock-ups and constant error conditions. This procedure will exit the current transaction/operation and clear temporary memory buffers. An initial clear procedure will not effect register programming, or clear previously stored totals in RAM memory.

Caution: An initial clear will cause balancing discrepancies if performed in the middle of a transaction.

Turn the keylock to the " P " position and depress the " SUBTOTAL " key. While holding the "SUBTOTAL" down, power the register off and back on.

The following receipt will be issued.

C6*16*92 .

.....

22222222

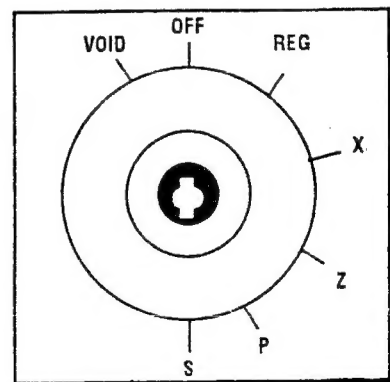
0387 00
17.55 00

STEP 2 Clearing Totals From Memory

The memory of the ER-3715/3615 series must be RAM Cleared before initial programming may take place.

Memory RAM Clear is performed with the "C" key in the S-Mode position. See the opposite diagram to locate the S-Mode position.

Totals and counters may be reset to zero either all at once, or a section at a time. Using the following as a guide, choose the procedure for clearing the desired section of memory.



TOTAL MEMORY RAM CLEAR (00 Key)

S-Mode keylock position

RAM clearing the cash register erases all totals and installs the default program. Use this procedure the first time the cash register is programmed.

Selective Clearing of RAM Memory.

RESET ALL TOTALS & COUNTERS(CHECK Key)

This procedure will reset ALL totals and counters(Transaction numbers,Z-counter, Grand total) while leaving register programming intact.

RESET GRAND TOTAL ONLY(CASH Key)

This procedure resets the Grand Total only, leaving all other programming ,totals and counters intact.

Follow this procedure to clear totals from memory:

Unplug ECR.

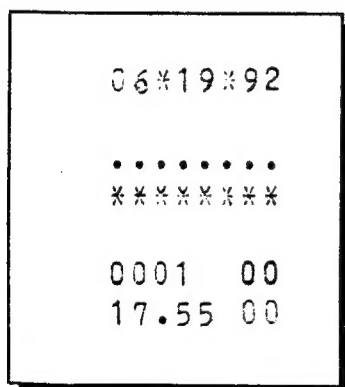
Locate control lock key marked C.

Insert key into the control lock (See figure on preceding page) and turn clockwise,past the position marked P,to the Master Clear position.This position is not marked on the control lock,but the C key can travel to this position.

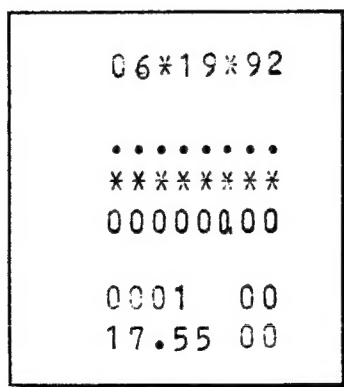
Choose the desired operation from those listed below. While holding the SPECIFIED key down,plug-in the ECR.

CONTINUE TO HOLD THE KEY DOWN UNTIL THE RECEIPT PRINTER STOPS PRINTING AND THE DISPLAY SHOWS 0.00.

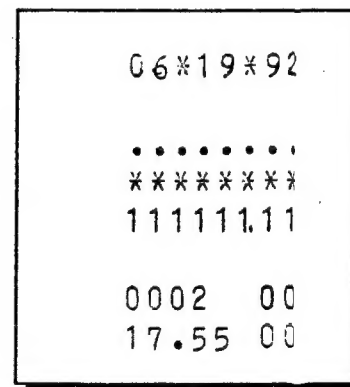
KEYS



00
Total Memory
Ram Clear



CHECK
Reset All
Total & Counters



CASH
Reset Grand Total Only

STEP 3 Service Mode Diagnostics

The Samsung ER-3715/3615 series offers several diagnostic routines which are formed in the S- or Service Mode. Each of these tests require the "C" key be turned to the S-Mode position. See Illustration on page 5.

These are:

Printer/Display Test

Enter 1 and press the CASH TEND Key. The register will cycle completely through the print character set while testing the display.

This test will repeat until the machine is unplugged from the power source.

Keyboard Test

Enter 2 and press the CASH TEND key. One at a time, press all the keys on the keyboard. Each key will show its location code on the display as it is depressed.

Exit the keyboard test mode by pressing the "CLEAR" key twice.

Keylock Test

Enter 3 and press the CASH TEND key. The corresponding code will appear on the display as the "C" key is rotated from position to position.

```
06*19*92
#
OTL
01NS
0.12CR
01.23CG
01234AT
0123.45TE
01234.56TI
012345.67Z
CK123456.78CD
EX234567.89X
FS345678.9*%
TS456789*%ST
TW56789*%.-
CA6789*%.- #
CF789*%.- 0TL
CH89*%.- 01NS
DA9*%.- 0.12CR
PC*%.- 01.23CG
VD.- 01234AT
@- 0123.45TE
RT 012345.67TI
012345.67Z
CK123456.78CD
EX234567.89X
FS345678.9*%
0003 00
17.56 00
```

Printer Test

STEP 4 EPROM CHECK SUM

Enter 4 and press the CASH TEND key. The EPROM type will print on the receipt.

```
03*01*92

*****
4100 .01
.....217
*****
0004 00
23.33 00
```

● Setting the Number of Departments (3715/4715/3740/3615/3640)

- ☐ Locate control key marked C.
- ☐ Insert key into the control lock(see page 3) and turn clockwise to the Master Clear(S-Mode) position. This position is not marked on the control lock, and only the key will travel to this position.
- ☐ Enter the following KEY SEQUENCE

(XX) - [X/TIME] - [CASH/TEND]

XX :ER-3715/4715 (5,10,15)
ER-3740 (15,40)
ER-3615 (5,10,0[15])
ER-3640 (15,0[40])

Now, the SAMSUNG ECR is now ready to operate using the default program.
The balance of programming procedures take place with the control lock in the 'P' Position.

● Setting the ER-4100's Department Reporting Order:

The presence of shift keys for levels 1,2,&3, allow "stacking" departments three to a key position. This gives the ER-4100's 117 department key locations three levels each, or 351 departments in all.

Department reporting order is fixed in one of two ways; selectable by the following S-mode programming procedure:

Department key position # 1 shall be occupied by departments 1,2, and 3, on levels 1,2, and 3.
Department key position #2 shall be occupied by departments 4,5, and 6 on levels 1,2, and 3

or....

Departments 1-117 shall occupy key positions 1-117, level 1.
Departments 118-234 shall occupy departments key positions 1-117, level 2, and so on.

	RCPT FEED	DETL FEED	RCPT ON/OFF	82 83 84 28
LEVEL 1 =	1	28	55	85
LEVEL 2 =	2	29	56	86
LEVEL 3 =	3 1	30 10	57 19	87
	4	31	58	
	5	32	59	
	6 2	33 11	60	
	7	34		
	8	35		
	9 3	36		
	10			
	11			
	12			
	RCPT FEED	DETL FEED	RCPT ON/OFF	28 145 262 28
LEVEL 1 =	1	10	19	29
LEVEL 2 =	118	127	136	146
LEVEL 3 =	235 1	244 10	253 19	260
	2	11	20	
	119	128	137	
	236 2	245 11	254	
	3	12		
	120	129		
	237 3	246		
	4			
	121			
	238			

Departments will always report in numeric order (1-351) and may be programmed for Zero-skip.

Programming Procedure:

- Locate control key marked C.
- Insert key into the control lock(see page 3) and turn clockwise to the Clear (S-Mode) position. This position is not marked on the control lock, and only the C key will travel to this position.
- Enter the digit for desired department assignment order (see below) press the "X/TIME" key, followed by the " CASH " key.

(0 OR 1) - [X/TIME] - [CASH]

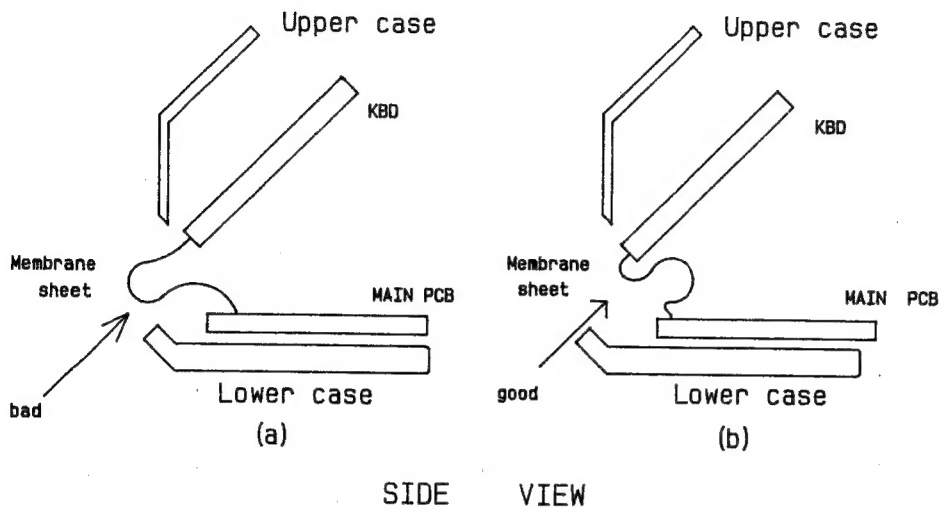
0 = level 1 = 1-117, level 2 = 118 - 234, level 3 =235 - 351
(DEFAULT)

1 = Key position 1 = Dept. 1,2,& 3 (levels 1,2, & 3), position 2 is 4,5,
& 6, and so on.

NOTE: Unless stated otherwise, all program operations default to "0" value.
The balance of programming procedures take place with the control lock in the 'P' position.

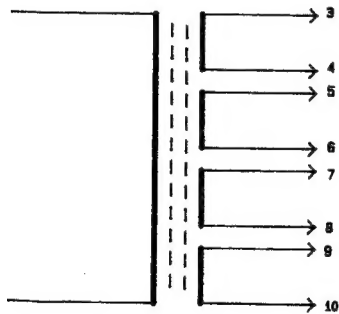
1-2 General Warning

When you assemble the Key-Board to the MAIN PCB, the membrane sheet should be the shape as fig. (b). If you assemble as Fig. (a), the key operations may incorrect



1-3 TRANSFORMER AND FUSE SPECIFICATION

TRANSFORMER SPECIFICATION



AREA	PRIMARY	SECONDARY	COLOR
U.S.A.	120V 60Hz	3-4 AC 19.5V	RED
		5-6 AC 9.5V	BLUE
		7-8 AC 26V	ORANGE
EUROPE	230V 50Hz	9-10 AC 5V	YELLOW

FUSE SPECIFICATION (SECONDARY)

LO. NO.	AREA	U.S.A.		EUROPE	
		SPECIFICATION	CODE NO.	SPECIFICATION	CODE NO.
FUSE1		125V NM 1A	949 115201NLNA	250V F1A	949 115003FHN B
FUSE2		125V SB 2A	949 115201SLNA	250V T2A	949 115009THNA

2. CIRCUITRY

2-1 POWER CIRCUIT

This machine has two different power sources, the one is a power circuit and the other is a BATTERY.

The power circuit generates five different DC voltage sources, + 5V for the logic, +20V for the PRINTER driving, +5V and -30V for the display. The BATTERY applies +3.6V to the back-up circuit.

1) VPP(+20V): MARK A ON PCB

The VPP voltage is used for the source voltage of the printer driver circuit. The AC 19.5V is rectified by BRIDGE DIODE BD2 and it is regulated by the capacitor 4700 μ F CE2. The switching circuit is composed of two transistors and a zener diode.

2) VCC(+5V): MARK E ON PCB

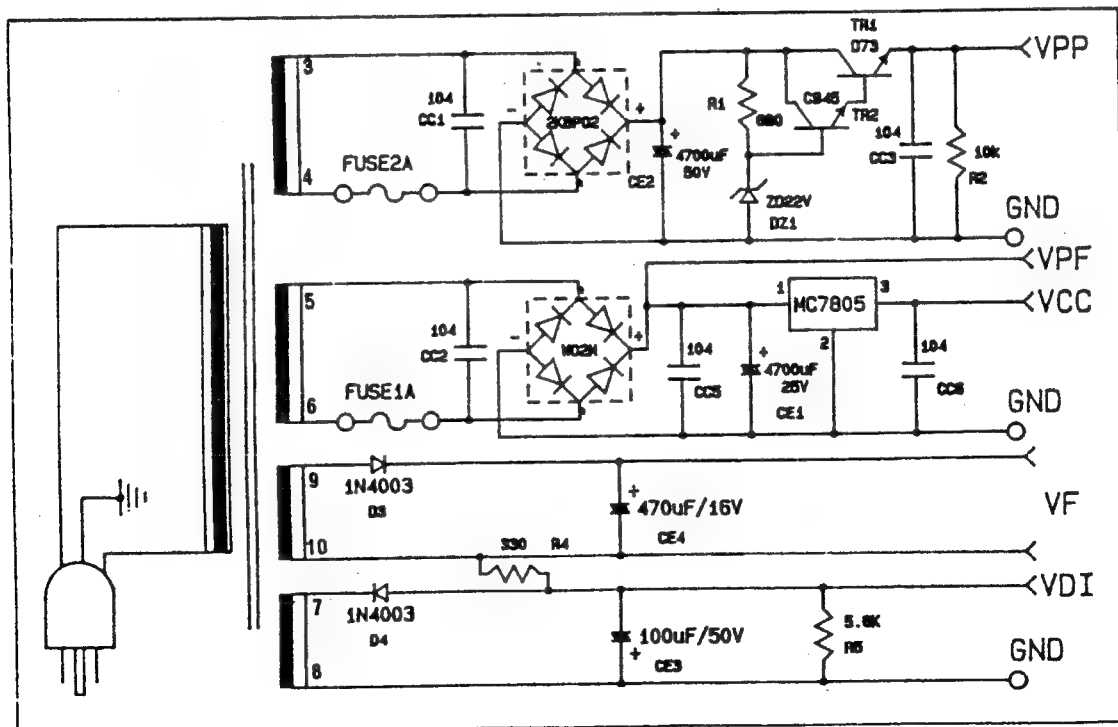
The VCC is used for the power source of the system logic. The AC 9.5V is rectified by the BRIDGE DIODE BD1 and regulated by the capacitor 4700 μ F CE1. The regulated voltage is applied to the input of the regulator MC7805. The output voltage of the MC7805 is supplied to the logic and +5V terminal.

3) VF(+5V): MARK C ON PCB

The VF voltage is used for providing the power to the filament of the DIGITRON.

4) VDI(-30V): MARK B ON PCB

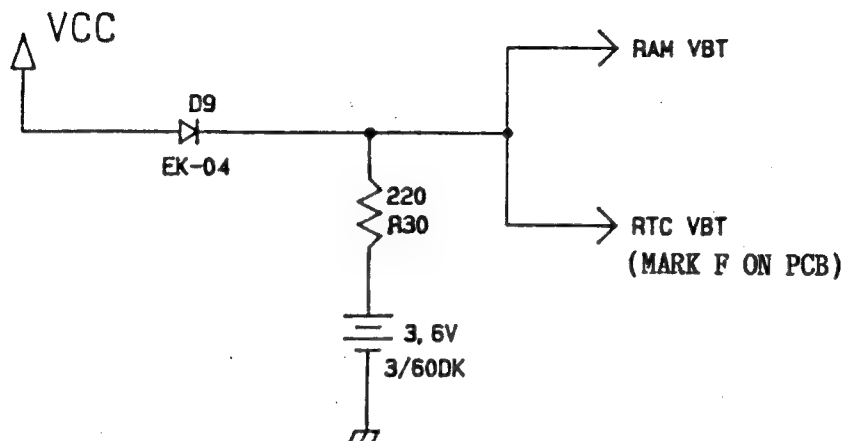
The VDI voltage is used for providing to GRID and PLATE of the DIGITRON.



2-2 BATTERY CIRCUIT

When the AC power is turned on, the VCC voltage goes to the BATTERY through D9,R30 for the charge.

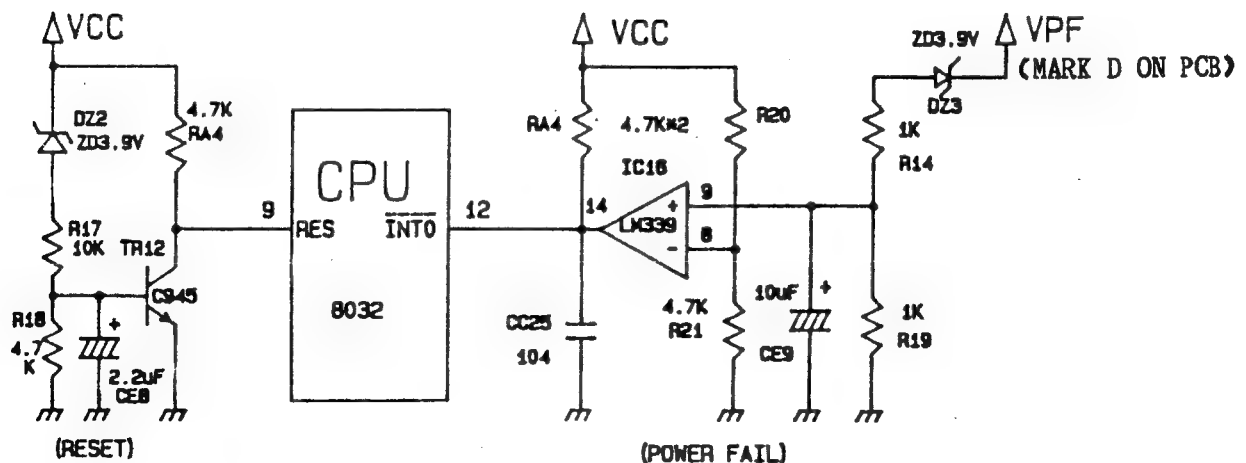
When the AC power is turned off, the BATTERY voltage goes to the RAM and RCT(real time clock).



2-3 RESET AND POWER FAIL DETECTION CIRCUIT

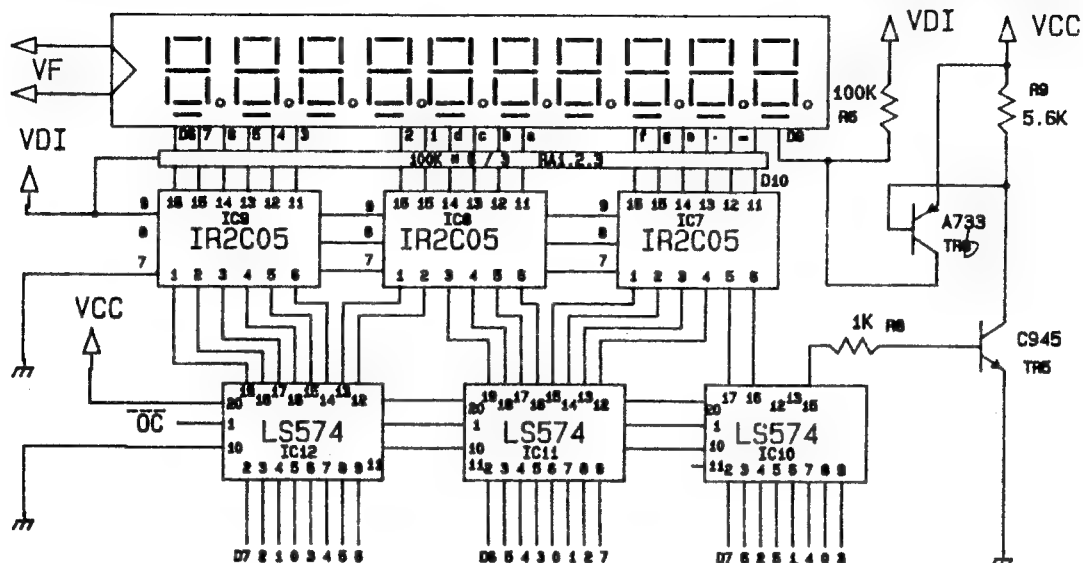
The reset circuit prevents the CPU from starting to operate before the system is fully powered-up and initialized.

The power fail detection circuit is used to save the state of the CPU and the RAM data before the logic voltage of CPU goes down below the normal voltage on the circuit such as main power off.



2-4 DISPLAY CIRCUIT

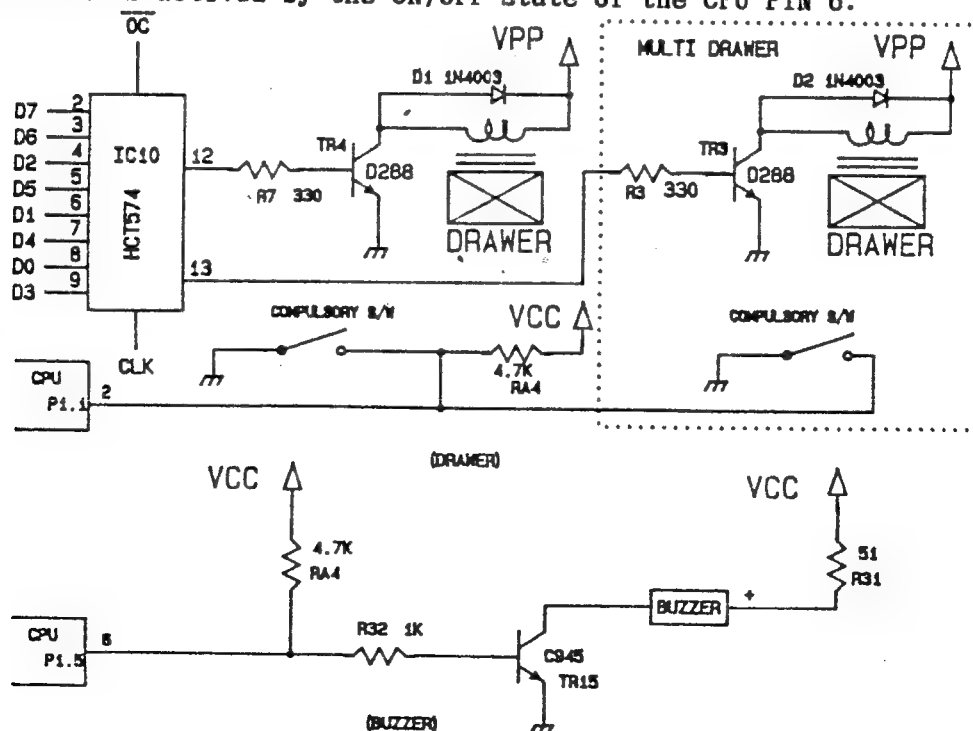
This circuit is composed of front display and rear display. The CPU send the digit and segment signals to the LATCH(74HCT574). These latched signals are amplified by the drive IC(IR2C05) or TR. These amplified signals drive the digits and segments of the DIGITRON.



2-5 DRAWER AND BUZZER CIRCUIT

The drawer solenoid is driven for 100mS by giving a high-level signal to the LATCH(74HCT574).The TR4(D288) drive the drawer solenoid. The drawer open sensor is a optional item in the DRAWER. This sensor switch closes for the drawer open condition, the CPU detect a low-level signal at PIN 2.

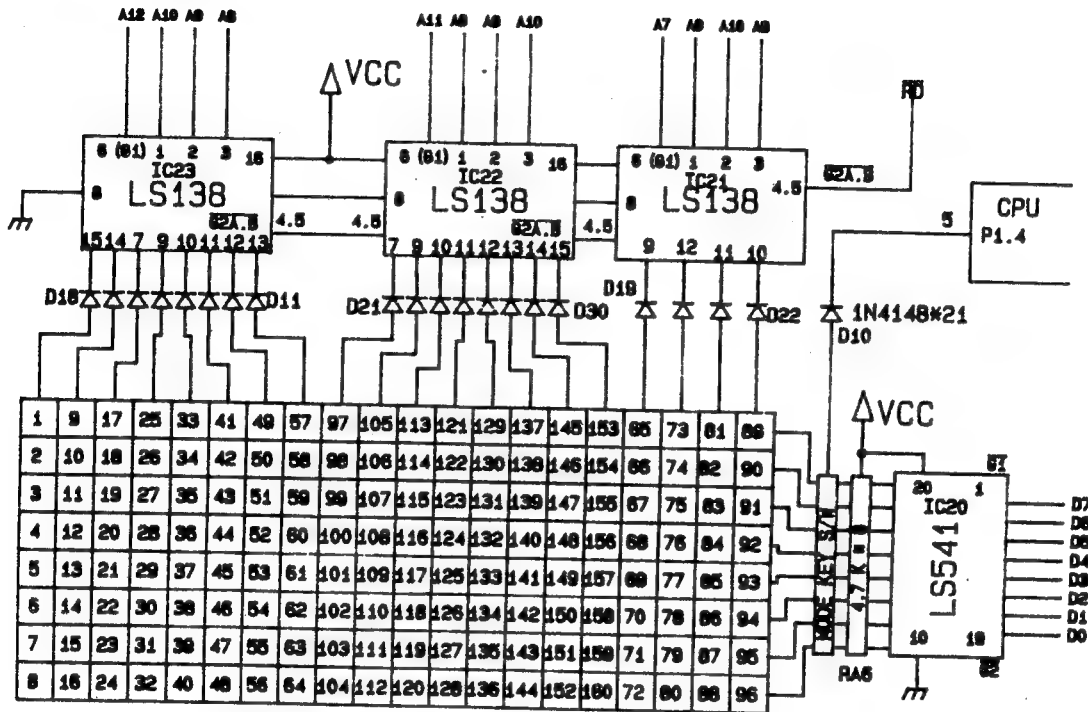
The BUZZER is activated by the ON/OFF state of the CPU PIN 6.



2-6 KEYBOARD CIRCUIT

The CPU sends a scan data to the decoder IC(74HCT138) sequentially. When the key switch is depressed, the decoded signal goes to the input pin of the buffer IC20(74HCT541), and then the CPU reads a return data from the output pin of the buffer IC20(74HCT541).

The CPU(PIN5) sends a mode scan data to the mode switch, and then the CPU reads a mode return data from the output pin of the 74HCT541.



7	15	23	31	111	71	95	79	63	55	87	103	127	135	143	151
8	16	24	32	112	72	96	80	64	56	88	104	128	136	144	152
4	12	20	39	108	68	92	47	60	52	84	119	124	132	140	159
3	11	19	40	107	67	91	48	59	51	83	120	123	131	139	160
5	13	28	36	109	69	76	44	61	53	100	116	125	133	148	156
6	14	27	35	110	70	75	43	62	54	99	115	126	134	147	155
2	21	29	37	106	93	77	45	58	85	101	117	122	141	149	157
1	22	30	38	105	94	78	46	57	86	102	118	121	142	150	158
10	18	26	34	66	90	74	42	50	82	98	114	130	138	146	154
9	17	25	33	65	89	73	41	49	81	97	113	129	137	145	153

(160 KEY TABLE)

4 5	4 6
3 7	3 8
2 9	3 0
2 1	2 2
1 3	1 4
5	6

4 1	3 3	2 5
4 2	3 4	2 6
4 7	3 9	3 1
4 8	4 0	3 2
4 4	3 6	2 8
4 3	3 5	2 7

1 7	9	1	4 9	5 7
1 8	1 0	2	5 0	5 8
2 3	1 5	7	5 5	6 3
2 4	1 6	8	5 6	6 4
2 0	1 2	4	5 2	6 0
1 9	1 1	3	5 1	5 9

(60 KEY TABLE)

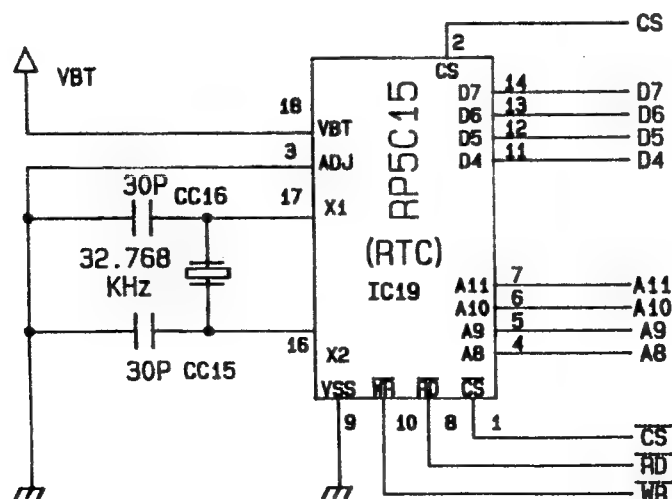
7	71	69	5	6	70	65	1	4	68	66	2	3	11	16
95	87	85	93	94	86	81	89	92	84	82	18	19	51	56
23	79	77	21	22	78	73	17	20	76	74	26	27	59	64
47	63	61	45	46	62	57	41	44	60	58	42	43	83	88
39	55	53	37	38	54	49	33	36	52	50	34	35	75	80
31	15	13	29	30	14	9	25	28	12	10	90	91	67	72

(90 KEY TABLE)

2-7 REAL TIME CLOCK CIRCUIT

The clock circuit is composed of a timer IC19(RP5C15), a crystal and two capacitors. The CPU reads a time data from RP5C15, and writes a new time data to the RP5C15.

The address line means the content of the secs,mins,hours,etc.



2-8 PRINTER CIRCUIT

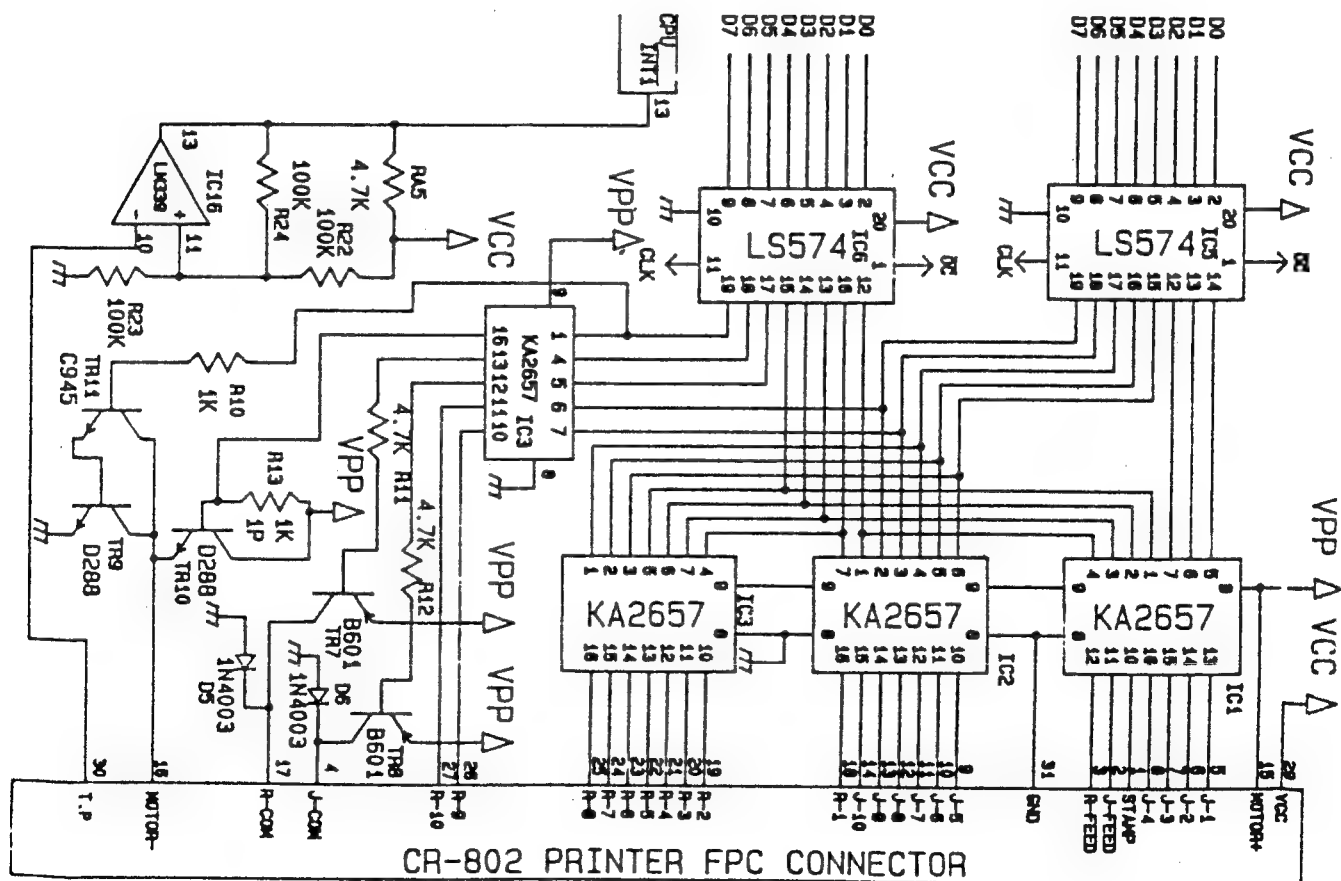
This machine uses the EPSON CR-812A or CR-802A Printer.

Validation printing : only CR-812A 20 column/1 line
 Printing speed : Approx. 2.6 lines/sec
 Roll size : 44.5 mm(W), 83mm(Max. Diameter)

The CPU sends a high signal to IC6 PIN19, then TR9 and TR11 are turned ON. As a result, the motor in the printer starts to rotate. The printer generates the timing pulse which determines the position of the character wheel. The CPU detects the timing pulse, compares the pulse count and the data for printing. If the count meets the data, the CPU sends a high signal to the LATCH IC(74HCT574) during the next pulse.

TR7 and TR8 are used for individual printing, such as JOURNAL printing or RECEIPT printing.

TR10 is used for motor break circuit which immediately stops the motor when the motor signal is turned OFF.



3 SPECIFICATION OF MAJOR COMPONENTS

3-1 CPU PORT DISCRIPTION(MCS-51 FAMILY)

FUNCTION	I / O	NAME	CPU PIN	CPU PIN	NAME	I / O	FUNCTION
NONE	-	P1.0	1	40	VCC	I	+ 5V
COMPULSORY	I	P1.1	2	39	P0.0(AD0)	I/O	ADDRESS DATA BUS
NONE	-	P1.2	3	38	P0.1(AD1)	I/O	ADDRESS DATA BUS
NONE	-	P1.3	4	37	P0.2(AD2)	I/O	ADDRESS DATA BUS
MODE CONTROL	O	P1.4	5	36	P0.3(AD3)	I/O	ADDRESS DATA BUS
BUZZER CONTROL	O	P1.5	6	35	P0.4(AD4)	I/O	ADDRESS DATA BUS
CLOCK CHIP SELECT	O	P1.6	7	34	P0.5(AD5)	I/O	ADDRESS DATA BUS
NONE	-	P1.7	8	33	P0.6(AD6)	I/O	ADDRESS DATA BUS
	I	RESET	9	32	P0.7(AD7)	I/O	ADDRESS DATA BUS
NONE	-	P3.0	10	31	/EA	I	GND
NONE	-	P3.1	11	30	ALE	O	ADDRESS LATCH
/INT0	I	P3.2	12	29	/PSEN	O	PGM STORE ENABLE
/INT1	I	P3.3	13	28	P2.7(AD15)	I/O	ADDRESS BUS
KEY CONTROL	O	P3.4	14	27	P2.6(AD14)	I/O	ADDRESS BUS
RAM CHIP SELECT	O	P3.5	15	26	P2.5(AD13)	I/O	ADDRESS BUS
/WR	I/O	P3.6	16	25	P2.4(AD12)	I/O	ADDRESS BUS
/RD	I/O	P3.7	17	24	P2.3(AD11)	I/O	ADDRESS BUS
X-TAL OUTPUT	O	XTAL2	18	23	P2.2(AD10)	I/O	ADDRESS BUS
X-TAL INPUT	I	XTAL1	19	22	P2.1(AD9)	I/O	ADDRESS BUS
VSS	-	GND	20	21	P2.0(AD8)	I/O	ADDRESS BUS

3-2 PRINTER(CR-802A/CR-812A)

1)GENERAL SPECIFICATIONS

The EPSON Digital Printer CR-802 Series is designed as a printer to be used exclusively for the cash register(ECR) and has the following features which match the ECR more than the conventional printers.

1. Independent paper feeding of receipts and journals and quick feeding of receipts are possible.
2. Stamp print and validation print can be conducted.
3. Inking system using ink rollers.
4. Validation sensor is equipped. The printer also features that the printing system is a non-impact system and sound is "zero" when the printer is in stand-by mode due to the intermittent motor drive.

2)Character print form(CR-802A/812A)

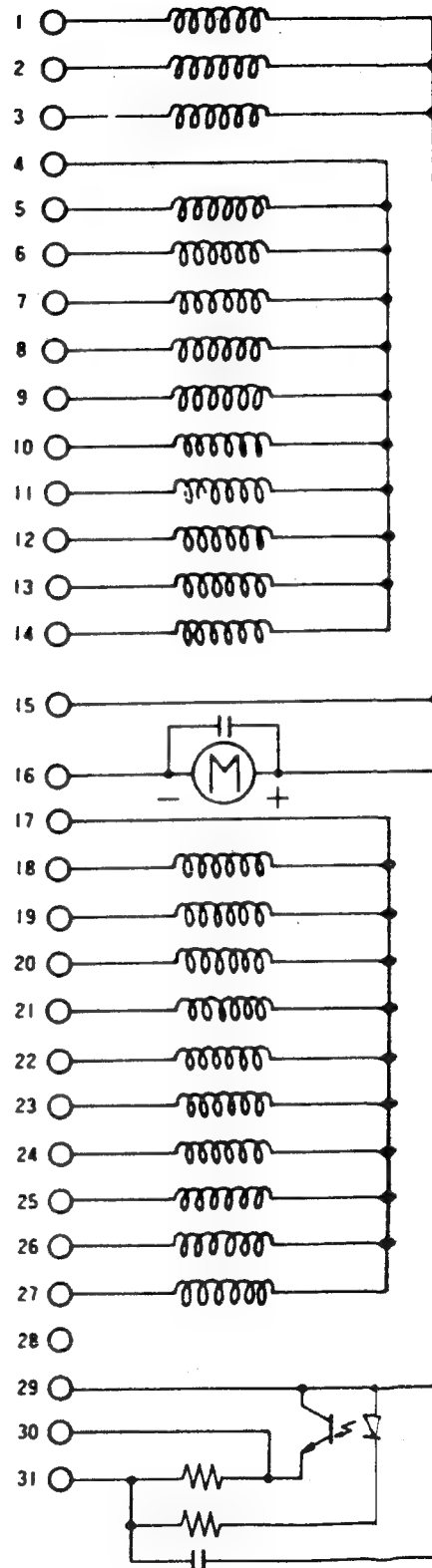
	22	21	20	19	18	17	16	15	14	13	12	
0	VD	*	*	*	*	*	*	*	*	X		
1	@	.	.	.	.	.	.	.	.	%
2	RT	-	-	-	-	-	-	-	-	ST		
3												
4	CK	0	0	0	0	0	0	0	0	#		
5	EX	1	1	1	1	1	1	1	1	TL		
6	FS	2	2	2	2	2	2	2	2	NS		
7	T3	3	3	3	3	3	3	3	3	CR		
8	T4	4	4	4	4	4	4	4	4	CG		
9	CA	5	5	5	5	5	5	5	5	AT		
10	CH	6	6	6	6	6	6	6	6	TI		
11	(-)	7	7	7	7	7	7	7	7	TI		
12	RA	8	8	8	8	8	8	8	8	Z		
13	PO	9	9	9	9	9	9	9	9	CD		
	77b	001	001	001	001	001	002	001	001	44b		

Print wheel
number

	11	10	9	8	7	6	5	4	3	2	1	
0	VD	*	*	*	*	*	*	*	*	X		
1	@	.	.	.	.	.	.	.	.	%
2	RT	-	-	-	-	-	-	-	-	ST		
3												
4	CK	0	0	0	0	0	0	0	0	#		
5	EX	1	1	1	1	1	1	1	1	TL		
6	FS	2	2	2	2	2	2	2	2	NS		
7	T3	3	3	3	3	3	3	3	3	CR		
8	T4	4	4	4	4	4	4	4	4	CG		
9	CA	5	5	5	5	5	5	5	5	AT		
10	CH	6	6	6	6	6	6	6	6	TI		
11	(-)	7	7	7	7	7	7	7	7	TI		
12	RA	8	8	8	8	8	8	8	8	Z		
13	PO	9	9	9	9	9	9	9	9	CD		
	77b	001	001	001	001	001	002	001	001	44b		

3-3 F.P.C Terminal Arrangement

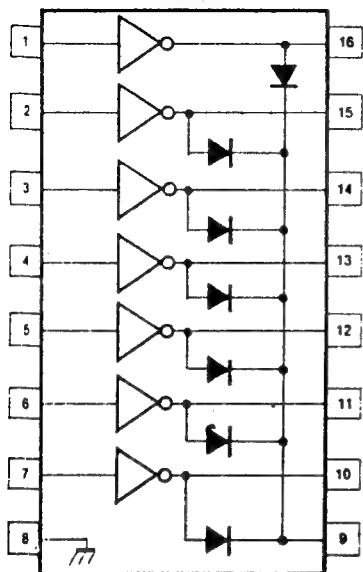
Stamp trigger coil
 J-side paper feeding trigger coil
 R-side paper feeding trigger coil
 J-side trigger magnet unit common wire (+)
 J-side trigger magnet unit column No. 1
 J-side trigger magnet unit column No. 2
 J-side trigger magnet unit column No. 3
 J-side trigger magnet unit column No. 4
 J-side trigger magnet unit column No. 5
 J-side trigger magnet unit column No. 6
 J-side trigger magnet unit column No. 7
 J-side trigger magnet unit column No. 8
 J-side trigger magnet unit column No. 9
 J-side trigger magnet unit column No. 10
 Motor (+)/stamp trigger coil/paper feeding coil
 common wire (+)
 Motor (-)
 R-side trigger magnet unit common wire (+)
 R-side trigger magnet unit column No. 1
 R-side trigger magnet unit column No. 2
 R-side trigger magnet unit column No. 3
 R-side trigger magnet unit column No. 4
 R-side trigger magnet unit column No. 5
 R-side trigger magnet unit column No. 6
 R-side trigger magnet unit column No. 7
 R-side trigger magnet unit column No. 8
 R-side trigger magnet unit column No. 9
 R-side trigger magnet unit column No. 10
 Empty
 Detector power source (+5V)
 Timing signal
 Detector power source (GND)



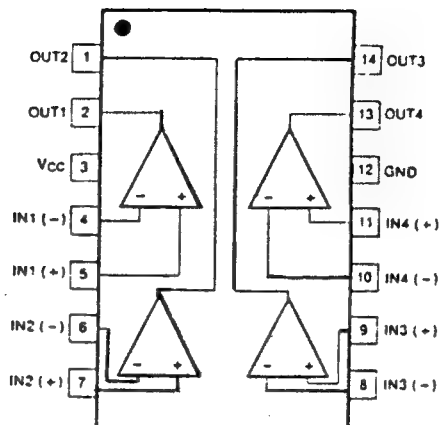
NOTE: For the arrangement of F.P.C. terminals are numbered 31 ... 1 from the ink roller holder side.

3-4 GENERAL SPECIFICATIONS

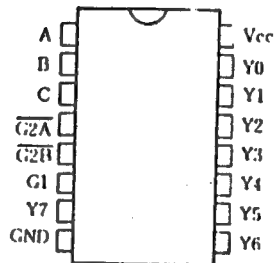
KA2657



LM339



KS74HCTLS138(3-Line to 8-Line Decoder/Multiplexer)

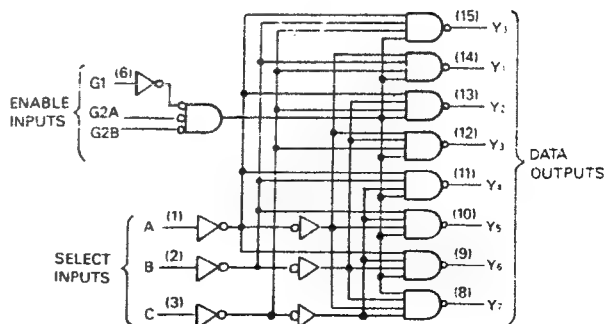


Function TABLE

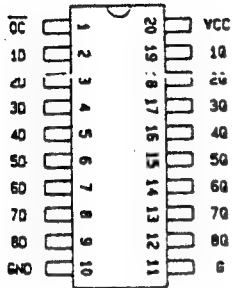
INPUTS		OUTPUTS							
ENABLE	SELECT								
G1 G2*	C B A	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7
X H	X X X	H	H	H	H	H	H	H	H
L X	X X X	H	H	H	H	H	H	H	H
H L	L L L	L	H	H	H	H	H	H	H
H L	L L H	H	L	H	H	H	H	H	H
H L	L H L	H	H	L	H	H	H	H	H
H L	L H H	H	H	H	L	H	H	H	H
H L	H L L	H	H	H	H	L	H	H	H
H L	H L H	H	H	H	H	H	L	H	H
H L	H H L	H	H	H	H	H	H	L	H
H L	H H H	H	H	H	H	H	H	H	L

* G2 = G2A + G2B

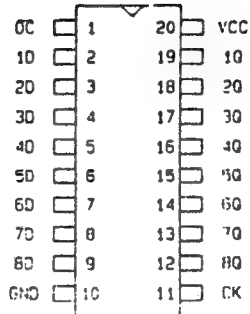
LOGIC DIAGRAM



74LS573



74LS574



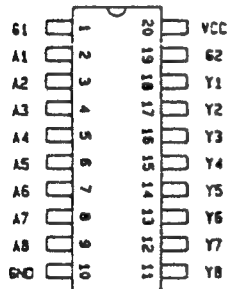
FUNCTION TABLE (LS573)
(EACH FLIP-FLOP)

INPUTS			OUTPUTS
/OC	ENABLE C	D	Q
L	H	H	H
L	H	L	L
L	L	X	Q
H	X	X	Z

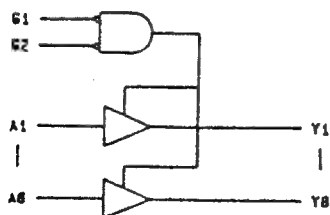
FUNCTION TABLE (LS574)

INPUTS			OUTPUTS
/OC	ENABLE C	D	Q
L	↑	H	H
L	↑	L	L
L	L	X	Q
H	X	X	Z

74LS541



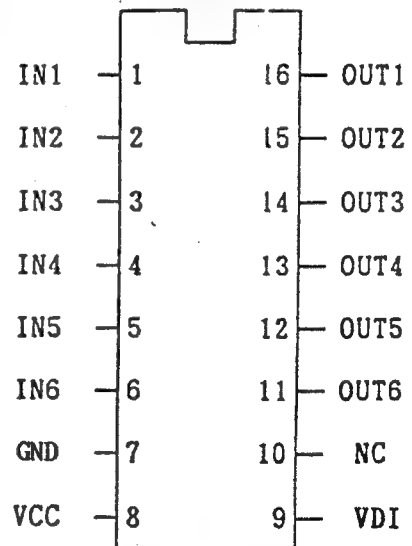
LOGIC DIAGRAM



FUNCTION TABLE (LS541)

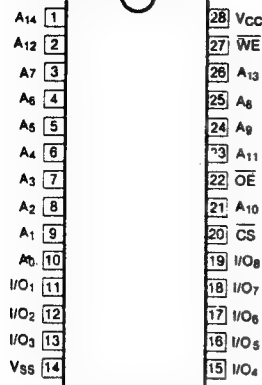
G1	G2	A	Y
L	L	L	L
L	L	H	H
H	X	X	Z
X	H	X	Z

IR2C05



CURRENT DRIVER

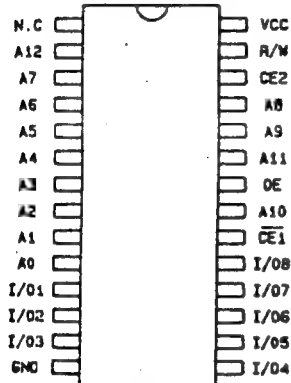
SRAM 62256



SRAM 62256(32K x 8)

PIN NAME	PIN FUNCTION
A ₀ - A ₁₄	ADDRESS INPUT
/CE	CHIP ENABLE
/OE	OUTPUT ENABLE
/WE	WRITE ENABLE
I/O ₁ - I/O ₈	DATA INPUT/OUTPUT
V _{CC}	DEVICE POWER(5V)
V _{SS}	GROUND

SRAM 6264

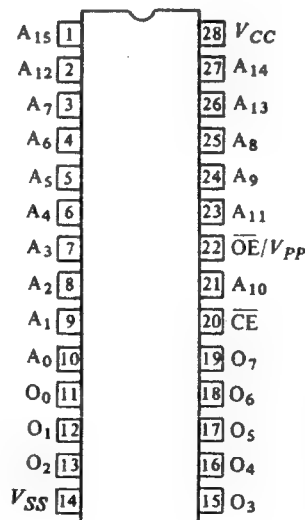


SRAM 6264 (8K)

PIN NAME	PIN FUNCTION
A ₀ - A ₁₂	ADDRESS INPUT
R/ W	READ/WRITE INPUT
/OE	OUTPUT ENABLE INPUT
/CE ₁ , CE ₂	CHIP ENABLE INPUT
I/O ₁ - I/O ₈	DATA INPUT/OUTPUT
VCC	POWER SUPPLY (5V)
GND	GROUND
N.C	NO CONECTION

A ₀ - A ₁₅	ADDRESS
CE /V _{PP}	CHIP ENABLE
OE/V _{PP}	OUTPUT ENABLE
O ₀ - O ₇	OUTPUTS
D.U.	DON'T USE

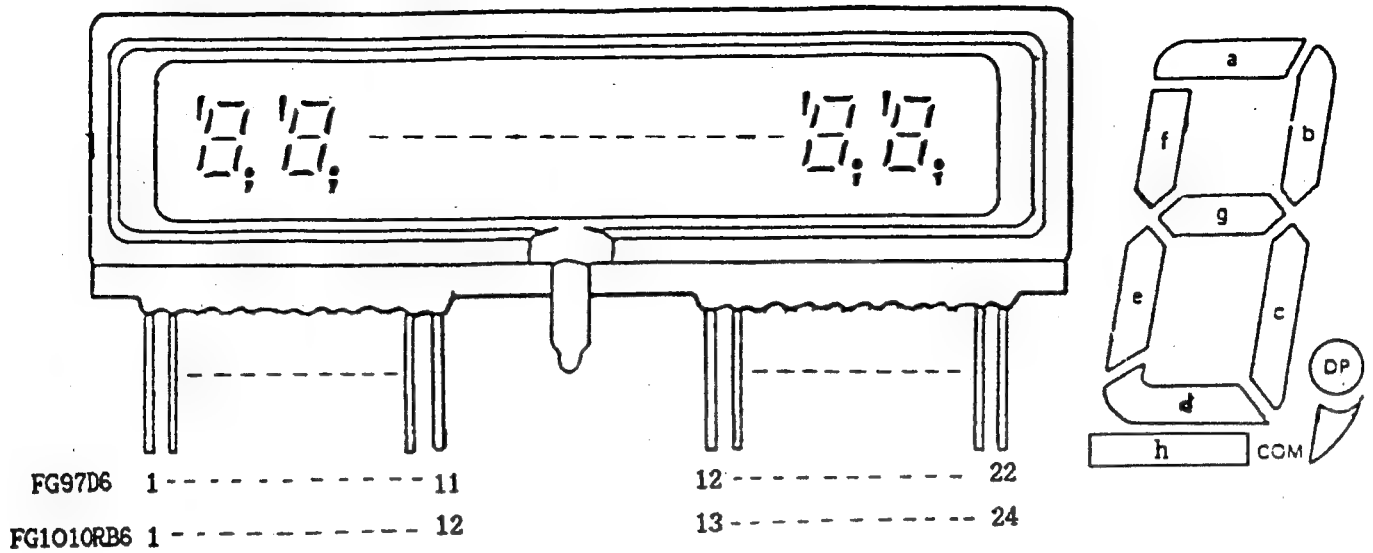
EPROM 27C512



27256 27C256	27C128 27128A	2764A 27C64	2732A	2716
V _{PP}	V _{PP}	V _{PP}		
A ₁₂	A ₁₂	A ₁₂	A ₇	A ₇
A ₇	A ₇	A ₇	A ₆	A ₆
A ₆	A ₆	A ₆	A ₅	A ₅
A ₅	A ₅	A ₅	A ₄	A ₄
A ₄	A ₄	A ₄	A ₃	A ₃
A ₃	A ₃	A ₃	A ₂	A ₂
A ₂	A ₂	A ₂	A ₁	A ₁
A ₁	A ₁	A ₁	A ₀	A ₀
A ₀	A ₀	A ₀	O ₀	O ₀
O ₀	O ₀	O ₀	O ₁	O ₁
O ₁	O ₁	O ₁	O ₂	O ₂
O ₂	O ₂	O ₂	GND	GND
GND	GND	GND		

2716	2732A	2764A 27C64	27C128 27128A	27266 27C256
V _{CC}	V _{CC}	V _{CC} /PGM	V _{CC} /PGM	V _{CC} A ₁₄
A ₈	A ₈	NC	A ₁₃	A ₁₃
A ₉	A ₉	A ₈	A ₈	A ₈
V _{PP}	A ₁₁	A ₉	A ₉	A ₉
/OE	/OE V	A ₁₁	A ₁₁	A ₁₁
A	A	/CE	/OE	/OE
/CE	/CE	A ₁₀	A ₁₀	A ₁₀
O ₇	O ₇	/CE ALE /CE	/OE	/CE
O ₆	O ₆	O ₇	O ₇	O ₇
O ₅	O ₅	O ₆	O ₆	O ₆
O ₄	O ₄	O ₅	O ₅	O ₅
O ₃	O ₃	O ₄	O ₄	O ₄
		O ₃	O ₃	O ₃

DIGITRON FG97D6/FG1010RB6



FG97D6

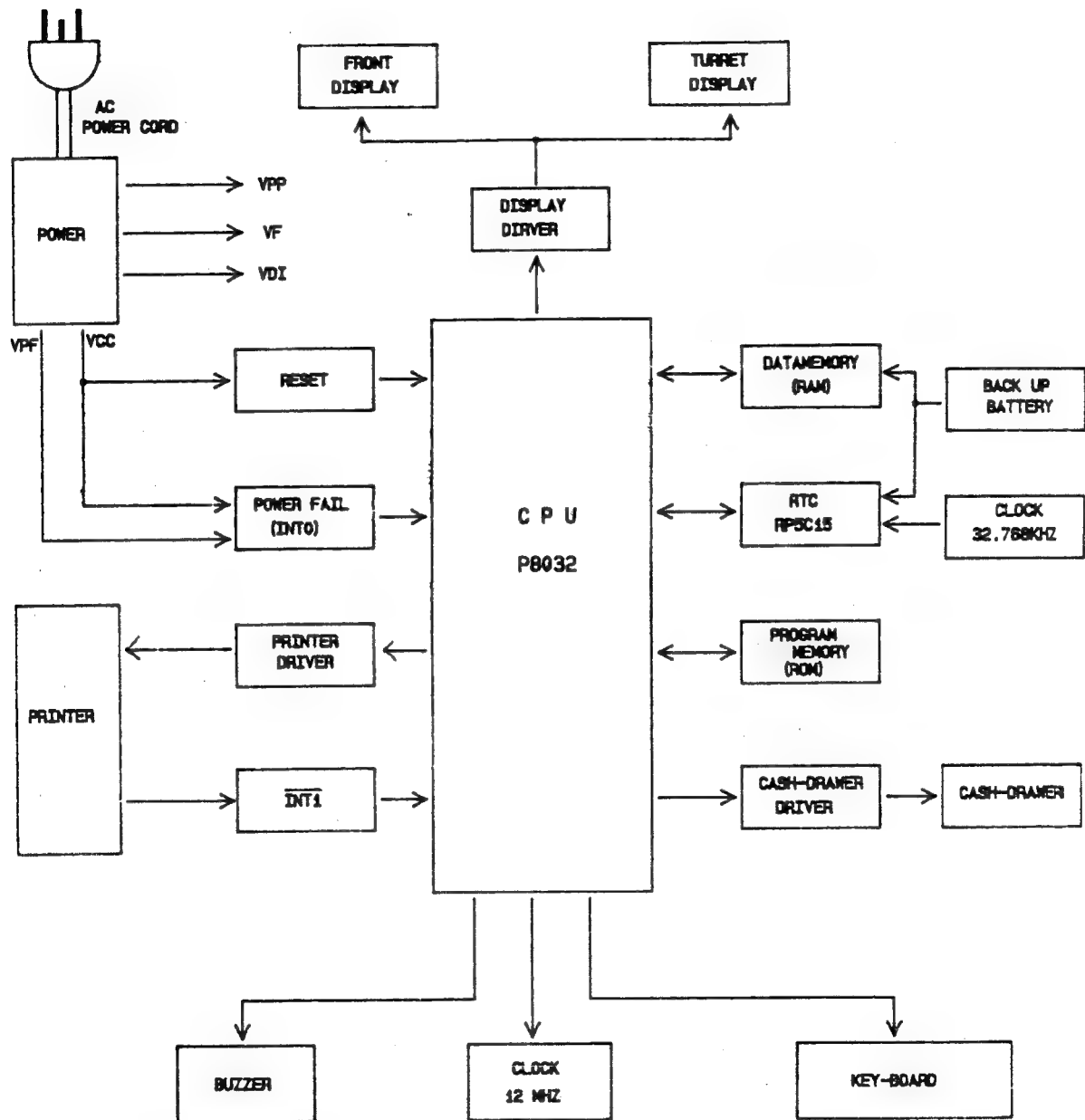
1: FILAMENT	2: PLATE(AP)	3: PLATE(f)	4: PLATE(g)
5: PLATE(e)	6: N.C.	7: N.C.	8: N.C.
9: GRID(9)	10: GRID(8)	11: GRID(7)	12: GRID(6)
13: GRID(5)	14: GRID(4)	15: GRID(3)	16: GRID(2)
17: GRID(1)	18: PLATE(COM)	19: PLATE(d)	20: PLATE(dp)
21: PLATE(c)	22: PLATE(b)	23: PLATE(a)	24: FILAMENT

FG1010RB6 PIN ASSIGNMENT

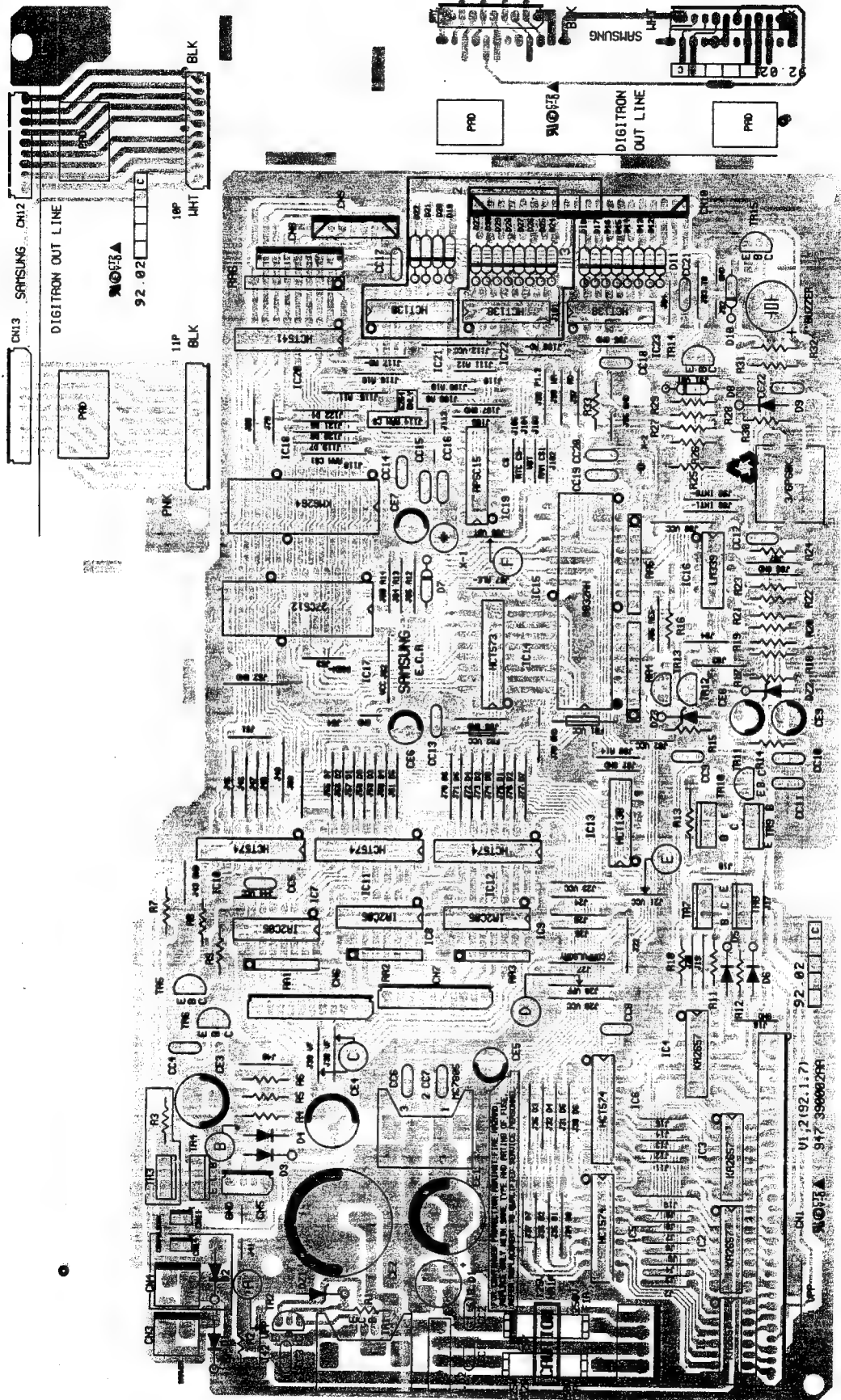
1: FILAMENT	2: PLATE(f)	3: PLATE(g)	4: PLATE(e)
5: PLATE(dp)	6: PLATE(h)	7: GRID(10)	8: GRID(9)
9: GRID(8)	10: GRID(7)	11: GRID(6)	12: GRID(5)
13: GRID(4)	14: GRID(3)	15: GRID(2)	16: GRID(1)
17: PLATE(COM)	18: PLATE(d)	19: PLATE(c)	20: PLATE(b)
21: PLATE(a)	22: FILAMENT		

4. GENERAL OVERVIEW

SYSTEM BLOCK DIAGRAM

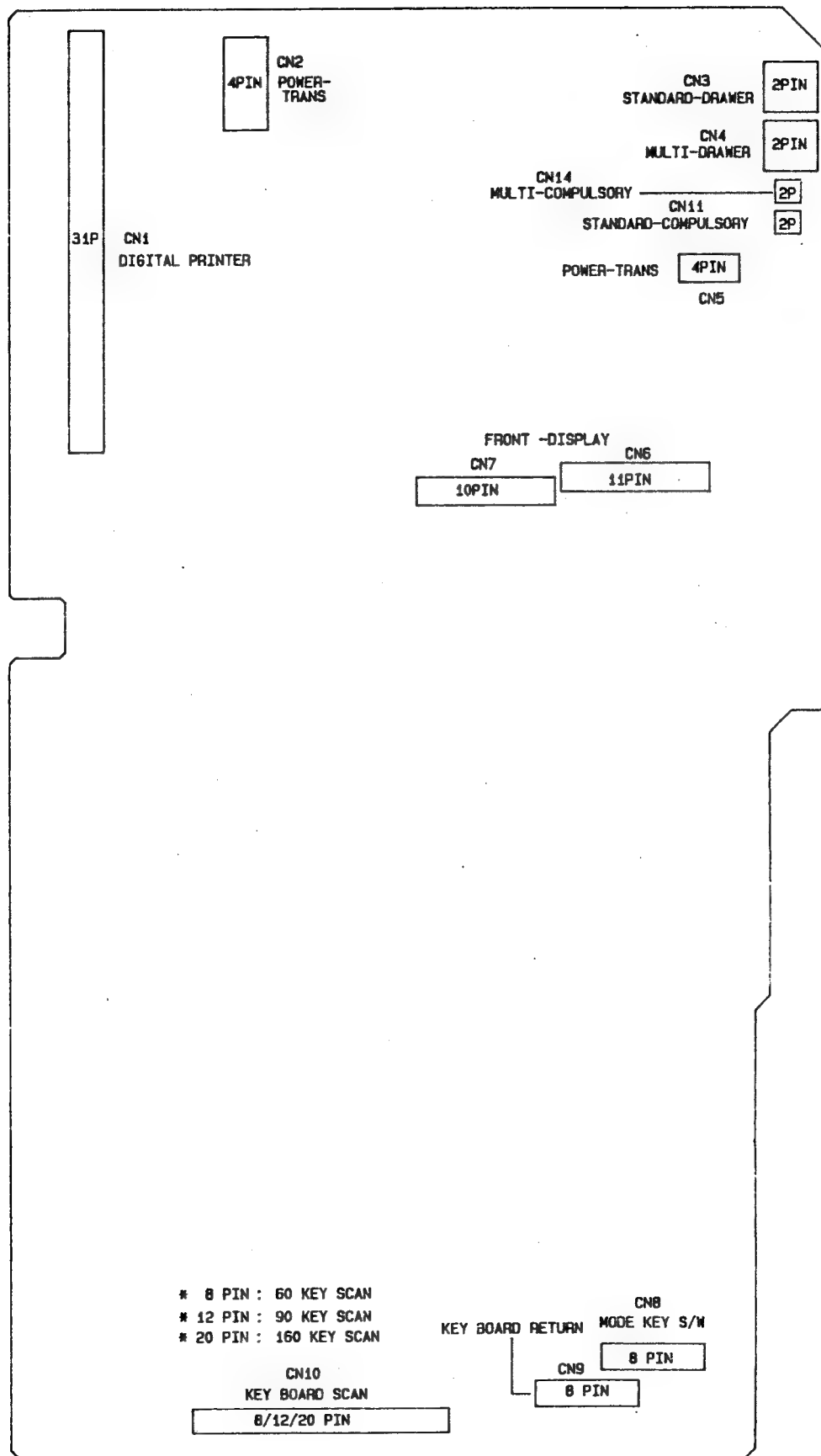


MAIN PCB LAYOUT

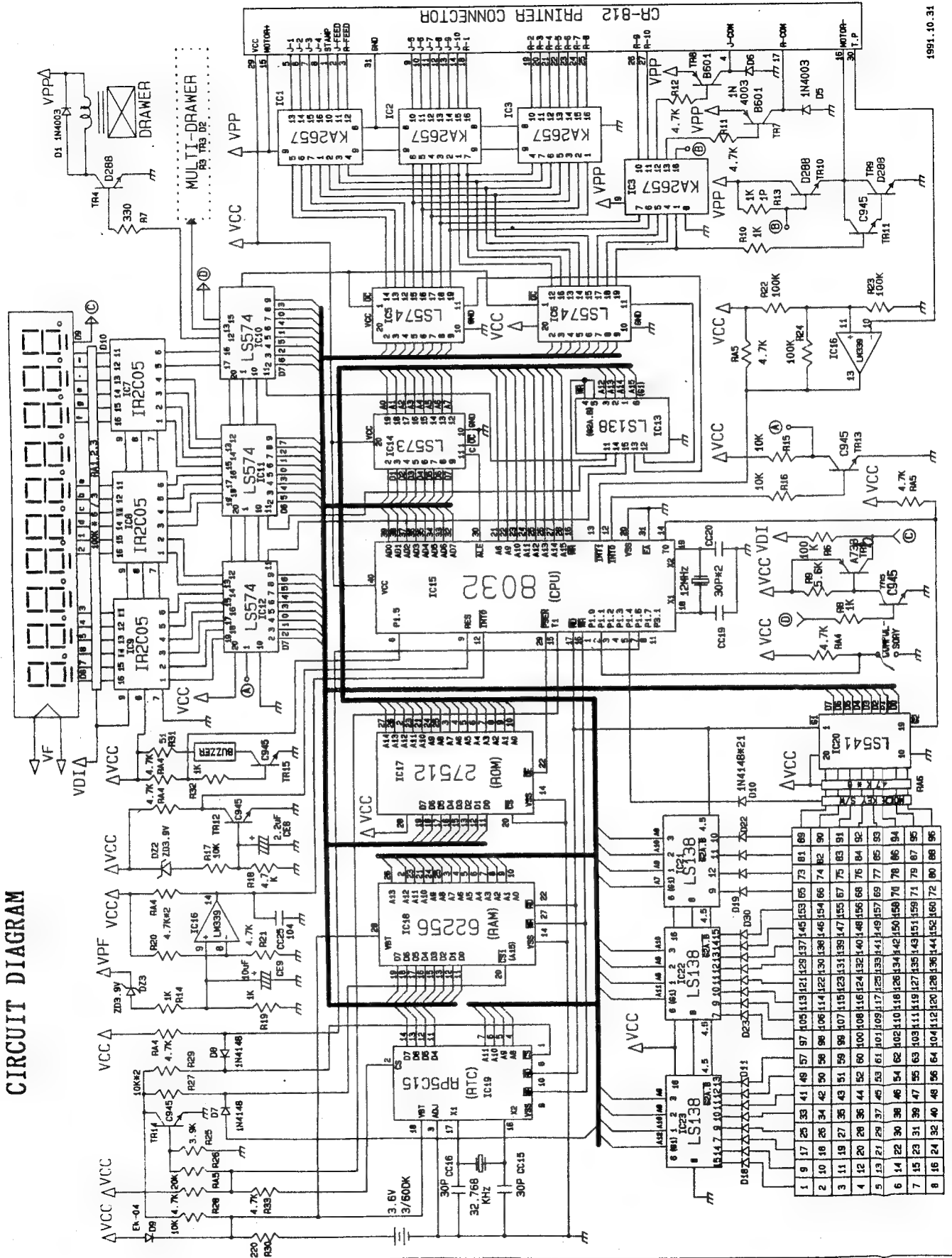


104/ER3715(S04-036)/COMP/REV;MD/92.2.15

DISASSEMBLY MAIN-PCB



CIRCUIT DIAGRAM



PARTS LIST

(ER-3715/4715/3740/4100/3610/3615/3640)

NOTES

RANK

Q'TY : Quantity used per unit

E : Essential
S : Service recommended
L : Less recommended
N : Not recommended

PART LIST

A. ASSY COVER PRINTER

LO. NO	CODE NUMBER	DESCRIPTION/SPECIFICATION	Q'TY	REMARKS	RNAK
A1	825 139356LA	INC. BRAND-PANEL; PVC T0.3	1		S
A2	821 390149AA	PLT. COVER-PRINTER; ABS(V0), T3.0	1		S
A2-1	813 390019AA	IMP. CUTTER-PAPER; SUS304-CP T0.3	1		S
A3	831 561002AA	COM. LOCK KEY ASS'Y; COVER PRINTER	1		S
A4	813 390024AA	IMP. CLIP-PLATE; SMP T0.5	1		S
A5	821 390150AA	PLT. WINDOW-JOURNAL; ACRYL T2.0	1		S

B. ASSY TURRET

B1	821 390152AB	PLT. WINDOW-TURRET; PC T3.0	1		E
B2	827 159038AA	PAC. PAD-TURRET; PC, RUBBER SPONGE	2		S
B3	895 449005AA	DISPLAY LCD	1		S
B4	821 390151AA	PLT. TURRET-BODY; ABS(V0) T3.0	1		S

C. ASSY UPPER

C1	825 139455AA	INC. PLATE MODE S/W; PVC T3.0	1		E
C2	821 390154AA	PLT. CASE-UPPER; ABS(V0) T3.0	1		E
C3	842 343022AB	TAPPING, PH+, 2, M3, L10; PH, +, 2, M3, L10, ZPC3	2		N
C4	28343-700-210	SWITCH-KEY LOCK Z; Z, 5L 11110	1		E
C5	28343-700-212	SWITCH-KEY LOCK C; C, 5L 11112	1		E
C6	933 230034KB	SWITCH-KEY LOCK, KEU-B; VD, 5L 111109	1		E
C7	933 230034KC	SWITCH-KEY LOCK, KEU-C; P, 5 1111	1		E
C8	933 230034KE	SWITCH-KEY LOCK REG-KEYM, 5L, 1111	1		S
C9	933 230034AA	SWITCH-ROTARY, 10; -, 12VDC, 30MA, 1	1		S
C10	821 390153AA	PLT. WINDOW-DISPLAY; PC(LEXAN141)	1	ER-3715	S
C10	821 390153AB	PLT. WINDOW-DISPLAY; PC(LEXAN141)	1	ER-4715/3740/3615/3640	S
C10	821 390153AC	PLT. WINDOW-DISPLAY; PC(LEXAN141)	1	ER-4100/3800	S
C11	841 214022BA	MACHINE, SCREW, PH+, MAX10; NO, PH, +, M4, L10	2		N
C12	842 840007BG	TAPPING, PH+, W, 2S, M3, L10; PH, +, 2, M3, L10, Z	1		N

D. ASSY DISPLAY

D1	842 840009AA	TAPPING, PH+, W, 2S, M3, L8; PH, +, 2, M3, L8, ZPC	2		N
D2	895 440005AA	DISPLAY LCD, 10DIZ	1		E
D3	813 390120AA	IMP. BRKT-DISPLAY; SBHG T1.2	1		S
D4	842 840009AA	TAPPING, PH+, W, 2S, M3, L8; PH, +, 2, M3, L8, ZPC	3		N

E. ASSY KEY-BOARD

E1	353 031054BBJA	KEY-BOARD ASS'Y, MEMBRANE TYPE	1	ER-3715	S
E2	353 053031BBJB	KEY-BOARD ASS'Y, MEMBRANE TYPE	1	ER-4715	S
E3	353 031054BBEA	KEY-BOARD ASS'Y, MEMBRANE TYPE	1	ER-3740	S
E4	353 031054AAJA	KEY-BOARD ASS'Y, FLAT TYPE	1	ER-4100	S
E5	353 031055AAAA	KEY-BOARD ASS'Y, MEMBRANE TYPE	1	ER-3615	S
E6	353 031055AAAB	KEY-BOARD ASS'Y, MEMBRANE TYPE	1	ER-3640	S

F. ASSY PRINTER

F1	353 031104DAAA	PRINTER ASSY, WHEEL/2: CR-802A	1	ER-3715/4100	S
F1	353 031104CAAB	PRINTER ASSY, WHEEL/2: CR-812A	1	ER-3740/4715/3615/3640	S
F1	353 031104DAAB	PRINTER ASSY, WHEEL/3: CR-812A	1	ER-3615/3640	S
F2	842 840021AA	TAPPING STOPPER RH SCREW STOPPER	4		S
F5	821 397002AB	CUSHION-PRINTER: NR(BLACK)	4		S

G. ASSY LOWER

LO.NO	CODE NUMBER	DESCRIPTION / SPECIFICATION	Q'TY	REMARKS	RANK
G1	923 390003AA	TRANS-POWER, 120V P120V/S19.5V, 9V	1	ER-3715/4715/3740/4100	E
G1	923 390004AA	TRANS-POWER, 230V P230V /S19.5, 9V	1	ER-3615/3640	E
G2	842 344022AB	TAPPING, PH+, 2, M4, L10; PH+, 2, M4, L10, ZPC3	2		N
G3	842 840009AA	TAPPING, PH+, W, 2S, M3, L8; PH, 2, M3, L8, ZPC	1		N
G5	855 134001BB	WASHER, TOOTHED, M4, ET; M4, ID4.3, OD8.5, TO	1		N
G4	847 501009CA	SPECIAL, TAPTITE, PH+, W, M4	1		N
G6	842 840007BG	TAPPING, PH+, W, 2S, M3, L10; PH+, 2, M3, L10, Z	1		E
G7	813 390012AA	IMP, HOLDER CORD; SBHG 1, T10	1		S
G8	842 840007BG	TAPPING, PH+, W, 2S, M3, L10; PH+, 2, M3, L10, Z	1		N
G9	955 001384AAAA	CBF-POWER CORD, 1700MM; DW-200P	1	ER-3715/4715/3740/4100	E
G9	955 001385AAAA	CBF-POWER CORD, 1600MM; GTBS-3	1	ER-3615/3640	E
G9	955 001380AAAA	CBF-POWER CORD, 1700MM; LP-33 HD5VVF 0.75	1	ER-3615/3640	E
G9	955 001382AAAA	CBF-POWER CORD, 1600MM; LTSA-3 0.75 HVC	1		E
G11	842 444022AB	TAPPING, RH+, 2S, M4, L10; RH+, 2, M4, L10, ZPC	2		E
G12	813 390013AA	IMP, BRACKET-CASING; SBHG1 T1.6	2		E
G10	813 390119AA	IMP, GROUND-PLATE T1.2, ER-3715	1		N
G13	842 840007BG	TAPPING, PH+, W, 2S, M3, L10; PH+, 2, M3, L10, Z	3		E
G14	955 390062AAAA	CBF-CONN ASSY, 100MM, 3P; W-E 2103 IN	1	ER-3715/4715/3740/4100	E
G14	955 390055AAAA	CBF-CONN ASSY, 185MM, 3P; SMP-03V-CBF	1	ER-3615/3640	E
G15	955 390056AZAA	CBF-CONN ASSY, 180MM, 2P; SMP-02V-B, BROWN	1		E
G17	821 390155AA	PLT, CASE-LOWER; ABS(V0) T3.0, ER-3715	1		E
G18	813 390018AC	IMP, BRACKET-FOOT; SCP1 T1.6	4		E
G19	842 444022AB	TAPPING, RH+, 2S, M4, L10; RH+, 2, M4, L10, ZPC	4		N
G20	847 501009CA	SPECIAL, TAPTITE, PH+, W, M4	1		N

MAIN PCB

LO.NO	CODE NUMBER	DESCRIPTION / SPECIFICATION	Q'TY	REMARKS	RANK
	24719-006-010	BATTERY-NICAD; 3/60DK	1		S
	821 397022AB	PLT, PAD-DIGITRON; RUBBER SPONGE T2.0	4		S
	825 119334BA	INC, LABEL SERIAL; 8.5*26.5, MOJO100G	1		N
	825 119355AB	INC, LABEL ROM PROTECTOR; MOJO PAPER 120G	1		N
	831 141001AA	COM, INSULATOR-TR; 4.5-8D 2-2H N66 V0	2		N
	831 142002AD	COM, PLATE-MICA; 5-13X19 TO.09 RECT	2		N
	831 511011AB	COM, HEAT SINK; A6063 H45	2		N
	841 313013BB	MACHINE, SCREW, PH+, M3X8; NO, PH+, M3, L8	2		N
	853 123001BB	NUT, HEX, 2-M3; HEX, 2, M3, -, ZPC3, SM20C	2		N
	873 790138CA	IC-MOS; 74HCT138 DECODER; DIP, 16, 300MIL	2	ER-3715/4715/3615	S
	873 790138CA	IC-MOS; 74HCT138 DECODER; DIP, 16, 300MIL	3	ER-3715/3640	S
	873 790138CA	IC-MOS; 74HCT138 DECODER; DIP, 16, 300MIL	4	ER-4100/3800	S
	873 790541AC	IC-MOS; 74HCT541, BUFFER; DIP, 20, 300MIL	1		S
	873 790573AC	IC-MOS; 74HCT573, LATCH; DIP, 20, 300MIL, OCT	1		S
	873 790574AC	IC-MOS; 74HCT574, LATCH; DIP, 20, 300MIL, OCT	1		S
	873 108032AA	IC-MPU, CPU, 8032, PROCESSOR; DIP, -, -, -	1		S
	881 200339AANB	IC-LIN, 339, COMPARATOR; DIP, 14, 300MIL	1		S
	881 307805KANE	IC-LIN, 7805, REGULATOR; TO-220, 3, -, 5V	1		S
	881 700515AA	IC-LIN, 5C15, TIME CLOCK; DIP, 18, -, -	1		S
	881 800205AA	IC-LIN, 205, TR ARRAY; DIP 16, 300MIL, -, 10M	3		S
	881 802003AAND	IC-LIN, 2657; DIP, 16, 300MIL, NPN, 25MA	4		S
	883 106264AA	IC-MEM, SRAM, 6264, 8K X 8; DIP, 28, 150NS	1	ER-3715	S
	883 162256AC	IC-MEM, SRAM, 62256, 32K X 8; DIP, 28, 120ns	1	4715/3740/4100/3615/3640	S
	883 627512BAND	IC-MEM, EPROM, 27512, 64K*8, ; DIP, 28, 250NS	1		S
	887 135104SE	IC-HYB, R-NETWORK, 7P; SIP, 7, 6, 100Kohm, 5%	3		S

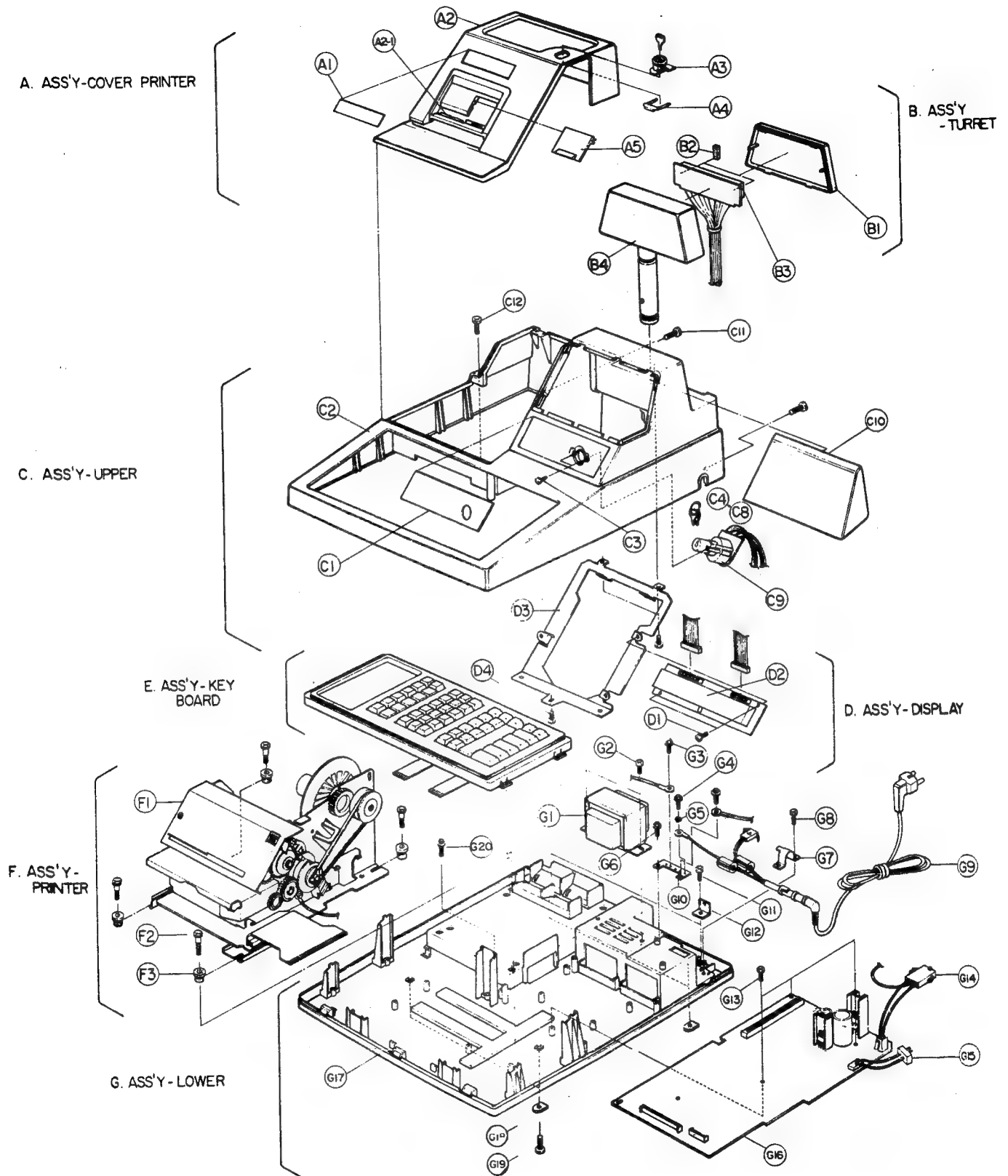
MAIN PCB

LO.NO	CODE NUMBER	DESCRIPTION / SPECIFICATION	Q'TY	REMARKS	RANK
887	135104SH	IC-HYB, R-NETWORK, 7P;SIP, 7.6, 100KOHM, 5%	3		5
891	290601AA	TR-PNP, KSB601, TO-220;1.5W, -100V, -100, -	2		5
891	490073AA	TR-NPN, KSD73, TO-220;VH	1		5
891	490288ACNA	TR-NPN, KSD288, TO-220;25W, 80V, 55V, 5V, 3A,	4		5
893	290031EB	DIODE-ZEN, UZ-3, 9B, DO-35	2		5
893	290032AH	DIODE-ZEN, UZP-22B, DO-41;1W, 22V, 10mA, 5%	1		5
893	390108AANA	DIODE-REC, W02M, ;200V, 1A, 1V, 1A, -, -,	1		5
893	399062AA	DIODE-RET, FM202, -, ;200V, -, 1V, 1A, -, -,	1		5
895	440005AA	DISPLAY-LCD, 10DIG;FG1010RBG,	1		5
895	449005AA	DISPLAY-LCD, 9DIG, -, ;FG97D6	1		5
911	441007GA	REF-MK, 1K, 5%, 1W;500V, -100 TO +100PPM/C,	1		5
917	123100LM	CAP-AL, ELEC, 107M, 2A;100UF, 100V, 20%, -, R-	1		5
917	124470EM	CAP-AL, ELEC, 478M, 1E;4700UF, 25V, 20%, -, R-	1		5
917	843470CM	CAP-AL, ELEC, 447M, 1C;470UF, 16V, 20%, -, R-	1		5
935	144108AANA	CAP-FLAT CABLE, 8P, 2.54;STRAIGHT, SN	1		5
935	144131AANA	CON-FLAT CABLE, 31P, 2.54;STRAIGHT, SN	1		5
935	155128DC	CON-IC SOCKET, 28P;DIP, STRAIGHT, SN, -, R-	1		5
935	220103ENDK	CON-NOWALL, HEADER, 3P, 1R;STRAIGHT, AU, 2.5	1		5
935	240104KC	CON-BOX HEADER, 4P, 2.5MM;1R, STRAIGHT, SN,	1		5
935	240108DA	CON-BOX HEADER, 8P, 2.5MM;1R, STRAIGHT, SN,	1		5
935	240109DA	CON-BOX HEADER, 9P, 2.5MM;1R, STRAIGHT, SN,	1		5
935	240110DA	CON-BOX HEADER, 10P, 2.5MM;1R, STRAIGHT, SN	1		5
935	240111DA	CON-BOX HEADER, 11P, 2.5MM;1R, STRAIGHT, SN	1		5
935	240902DF	CON-WALL HEADER, 2P, 3.96;STRAIGHT, SN,	1		5
935	240904DF	CON-WALL HEADER, 4P, 3.96;STRAIGHT, SN,	1		5
935	240109DA	CON-WALL HEADER, 2P, 3.96;STRAIGHT, 1WALL	1		5
935	355102DBNG	CON-SHUNT, 2P, -, ;AU FUSE, 2.54MM	1		5
939	010031AA	AUDIO-BUZZER: -, -, -	1		5
941	110067UBNA	CRYTAL, 12M, 50;HC-18/U, -, 250HM, 7PF, 1MW	1		5
941	110073AA	CRYTAL, 32.768K, 20;DT-38, 12.5PF, 30KOHM	1		5
949	115201NLNA	FUSE1 125V NM 1A	1	U. S. A.	5
949	115201SLNA	FUSE2 125V SB 2A	1	U. S. A.	5
949	115003FHN B	FUSE1 250V F1A	1	EUROPE	5
949	115009THNA	FUSE2 250V T2A	1	EUROPE	5
955	390058AAAA	CBF CONN ASSY, 290MM, 10P;5264-10P+5395-1	1		5
955	390058AAAB	CBF CONN ASSY, 370MM, 10P;5264-10P+5395-1	1		5
955	390059AAAA	CBF CONN ASSY, 290MM, 11P;5264-11P+5395-1	1		5
955	390060AAAA	CBF CONN ASSY, 370MM, 09P;5264-09P+5395-0	1		5

MAIN AUTO

LO.NO	CODE NUMBER	DESCRIPTION / SPECIFICATION	Q'TY	REMARKS	RANK
891	190733XC	TR-PNP, KSA733, TO-92;0.25W, -60V, -50V, -5V	1		5
891	390006XA	TR-PNP, KSC945, TO-92;0.25W, 60V, 50V, 5V, 0.	7		5
893	114148AANA	DIODE-SIG, 1N4148, DO-35;75V, 150mA, 1V, 10M	11		5
893	314003AANC	DIODE-REG, 1N4003, DO-41;200V, 1A, 1.1V, 1A	11		5
893	399060AA	DIODE-RET, EK-04, DO-41;40V, 1A, 0.55V, 1.5A	1		5
911	125107DA	REF-CF, 51, 5%, 1/4W;250V, -350 TO +350PPM	1		5
911	132207DA	REF-CF, 220, 5%, 1/4W;250V, -350 TO +350PPM	1		5
911	133307DA	REF-CF, 330, 5%, 1/4W;250V, -350 TO +350PPM	2		5
911	136807DA	REF-CF, 680, 5%, 1/4W;250V, -350 TO +350PPM	1		5
911	141007DA	REF-CF, 1K, 5%, 1/4W;250V, -350 TO +350PPM	5		5
911	143907DA	REF-CF, 3.9K, 5%, 1/4W;250V, -350 TO +350PP	1		5
911	144707DA	REF-CF, 4.7K, 5%, 1/4W;250V, -350 TO +350PP	6		5
911	145607DA	REF-CF, 5.6K, 5%, 1/4W;250V, -350 TO +350PP	2		5
911	151007DA	REF-CF, 10K, 5%, 1/4W;250V, -350 TO +350PPM	2		5
911	152007DA	REF-CF, 20K, 5%, 1/4W;250V, -350 TO +350PP	1		5
911	161007DA	REF-CF, 100K, 5%, 1/4W;250V, -350 TO +350PP	4		5
911	312300HJHH	CAP-CERAMIC, 300J, 1H, SL;300PF, 50V, 5%, P35	4		5
915	336100HZVH	CAP-CERAMIC, 104Z, 1H, Y5V;100NE, 50V, -20T	16		5
915	336100HZVH	CAP-CERAMIC, 104Z, 1H, Y5V;100NE, 50V, -20T	2		5
917	121220HM	CAP-AL, ELEC, 225M, 1H, 2.2UF, 50V, 20%, -R, -R	1		5
917	122100HM	CAP-AL, ELEC, 106M, 1H, 10 UF, 50V, 20%, -R, -R	1		5
917	123100HM	CAP-AL, ELEC, 107M, 1H, 100UF, 16V, 20%, -R, -R	3		5
937	120204BA	MAG-CORE, FERITE, BEAD;BEAD, 3.5X6.5MM, -,	3		5
947	390002AA	PWB-MAIN, COMP, ER-3715, 11A;197X330XT1.6,	1		5
955	005001AABB	CBF-JUMPER WIRE, 52MM;TAPPING, 52MM	123		5

DISASSEMBLY DIAGRAM



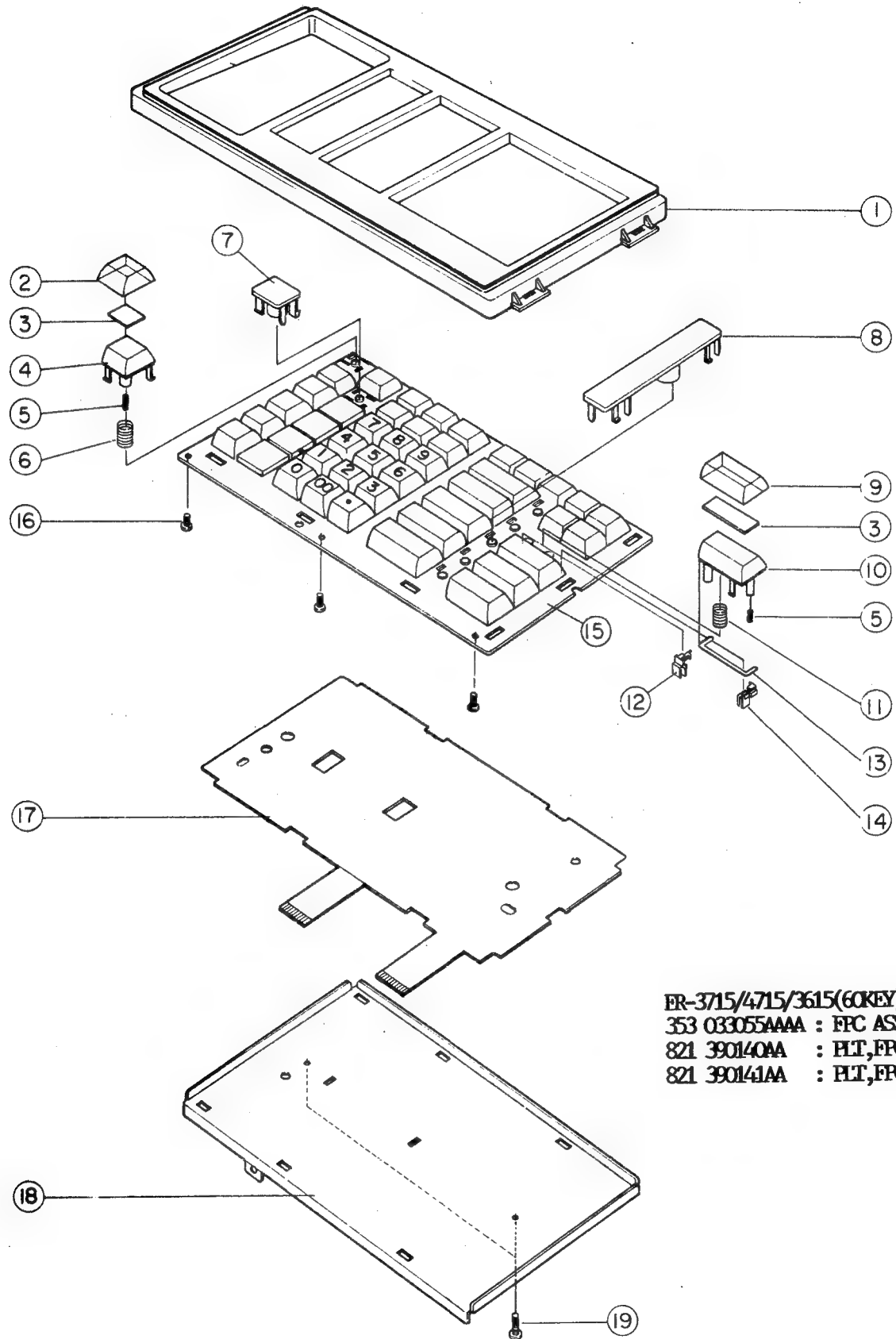
ASSY KEY-BOARD (MEMBRANE TYPE:60KEY/90KEY)

LO.NO	CODE NUMBER	DESCRIPTION/SPECIFICATION	Q'TY	REMARKS	RANK
1	821 390156AA	PLT,KBD-HOUSING:ABS(V0)-60KEY	1	ER-3715/4715/3615	S
1	821 390157AA	PLT,KBD-HOUSING:ABS(V0)- 90KEY	1	ER-3740/3640	S
2	27624-702-110	KEY-CAP S:PC 1*1(S-Z0513-71 #01)	0		S
3	825 119331KA	INC,LABEL-KEY TOP SET:MOJO 100GR	1	VARIOUS IN EACH MODEL	S
4	27623-701-310	KEY-TOP S:ABS 1*1(302KAS-014-01)	1	USA, EUROPE	S
5	26674-710-810	COIL-SPRING:SUS CONTACT(601KAS-001-01)	1	USA, EUROPE	N
6	26674-710-610	COIL-SPRING:SWPA RETURN 1*1U(601KAS)	1	USA, EUROPE	S
7	821 390142AA	PLT,BLANK-KEY TOP(1X1):ABS(V0) T3.0	5	ER-3715	S
8	821 390143AA	PLT,BLANK-KEY TOP(1X5):ABS(V0) T3.0	1	USA	S
9	27624-702-210	KEY-CAP L:PC 1*2(S-Z0513-75 #01)	1	USA, EUROPE	S
10	821390-160-AA	PLT,KEY-T:PC 1*2:302 KAS-032-00ABS	1		S
11	831522-056-AA	COM,COIL-SPRING RETURN,1*2	1		S
12	821390-158-AA	PLT,HOOK-A(541KAS-001-01),POM	1		S
13	813 390124AA	IMP,SPACE-BAR:321KAS-019-90,SUS 304	1		S
14	821390-158-BA	PLT,HOOK-B(541KAS-002-01),POM	1		S
15	821 390139AA	PLT,FRAME:ABS(V0) T1.6,ER-3715	1	ER-3715	S
15	821 390144AA	PLT,FRAME:POM 1.6	1	ER-3740	S
16	842 840009AA	TAPPING PH,W,2S,M3SCREW,L8,ZPC3,SM20C	8		S
17	353 033055AAAC	FPC-ASSY	1	ER-3740/3640	S
17	821 390140BA	PLT,FPC-A:PETP TO.125	1	"	N
17	821 390141BA	PLT,FPC-B:PETP TO.125	1	"	N
18	813 390121AA	IMP,BASE-PLATE:SECC TO.8	1	"	N
18	813 390122AA	IMP,BASE-PLATE:SECC TO.8,ER-3740	1	ER-3740/3640	N
	23554-701-410	SWITCH-KEY TOP 0:ABS(302KAS-019-05)	1	ER-3615/4715/4715/3640/3740	S
	23554-701-010	SWITCH-KEY TOP 00:ABS(302KAS-017-31)	1	"	S
	23554-701-110	SWITCH-KEY TOP .:ABS(302KAS-017-32)	1	"	S
	23554-700-210	SWITCH-KEY TOP 1:ABS(302KAS-017-21)	1	"	S
	23554-700-310	SWITCH-KEY TOP 2:ABS(302KAS-017-22)	1	"	S
	23554-700-410	SWITCH-KEY TOP 3:ABS(302KAS-017-23)	1	"	S
	23554-700-510	SWITCH-KEY TOP 4:ABS(302KAS-017-24)	1	"	S
	23554-701-310	SWITCH-KEY TOP 5:ABS(302KAS-018-05)	1	"	S
	23554-700-610	SWITCH-KEY TOP 6:ABS(302KAS-017-26)	1	"	S
	23554-700-710	SWITCH-KEY TOP 7:ABS(302KAS-017-27)	1	"	S
	23554-700-810	SWITCH-KEY TOP 8:ABS(302KAS-017-28)	1	"	S
	23554-700-910	SWITCH-KEY TOP 9:ABS(302KAS-017-29)	1	"	S
	842 840009AA	TAPPING,PH+,W,2S,M3,L8:PH,+,2,M3,L8	8	"	S
	813 390124AA	IMP,SPACE-BAR:321KAS-019-90,SUS 304	1	"	S
	821 390140BA	PLT,FPC-A:PETP TO.125,ER-3740	1	ER-3740	N
19	842 343022AB	TAPPING,PH+,2,M3,PH+,L10,PH,ZPC3,SM20C	1	USA/EUROPE	S
19	842 343022AB	TAPPING,PH+,2,M3,L10:PH,+,2,M3,L10	2	USA, EUROPE	S

ASSY KEY-BOARD (ER-4100 - FLAT TYPE)

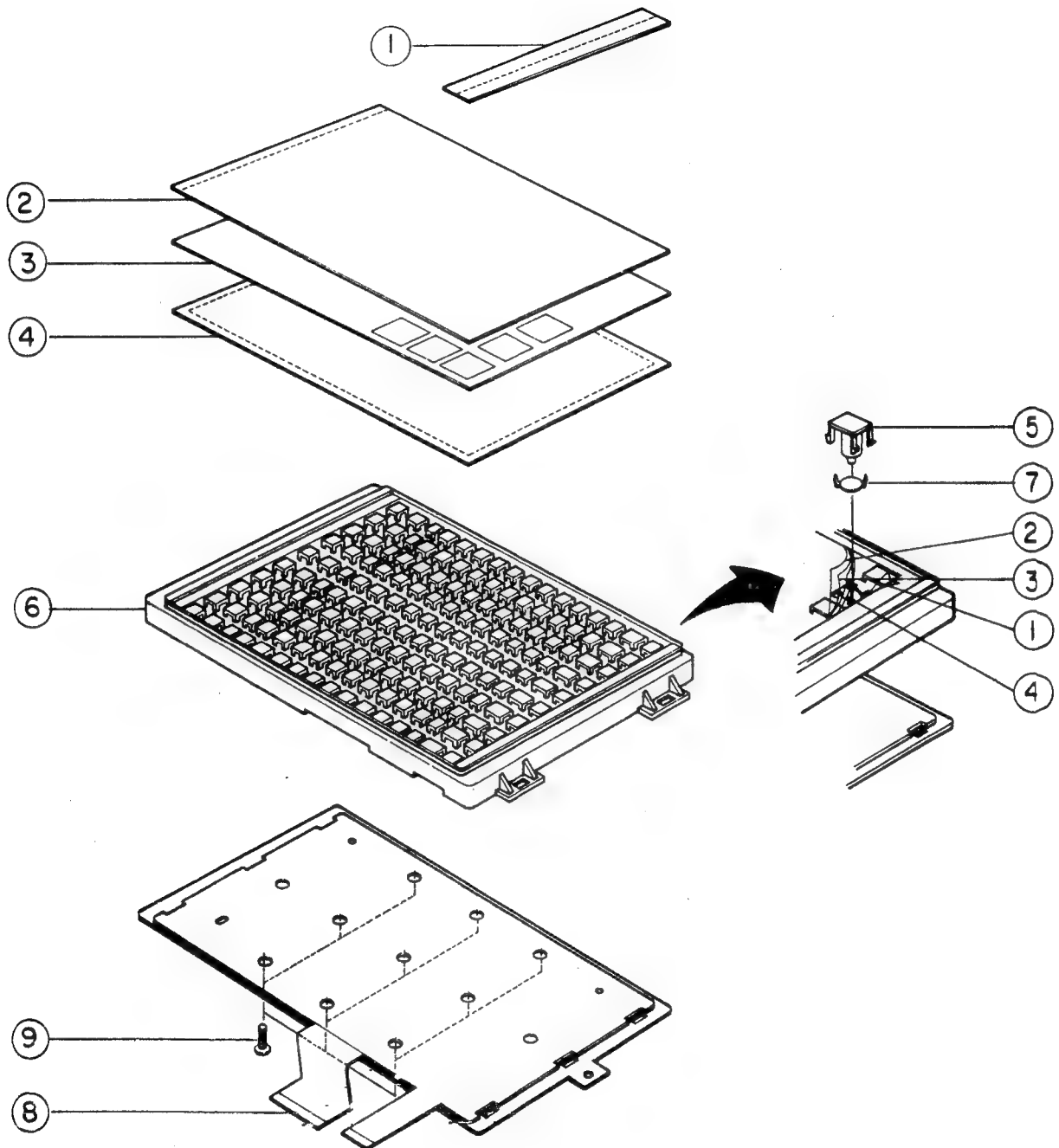
LO.NO	CODE NUMBER	DESCRIPTION/SPECIFICATION	Q'TY	REMARKS	RANK
	353 033054AAJA	KEY-BOARD ASSY	1	ER-4100	S
1	821 390148AA	PLT,KBD GUIDE SHEET:PC TO.5	1		S
2	821 390146AA	PLT,KBD PROTECT SHEET-A:PC TO.5	1		S
3	825 119331PA	INC,LABEL-SHEET	1		S
4	821 390147AA	PLT,KBD PROTECT-SHEET-B:PC T.15	1		S
5	821 390159AA	PLT,KEY-TOP 1*1,ABS,350KFS-003-90	1		S
6	821 390145AA	PLT,FRAME:ABS(V0) T1.6,ER-4100	1		S
7	813 390125AA	IMP,METALDOM,SUS,304,341KAS-008-91	1		S
8	353 033055AAAB	FPC-ASSY	1		S
8	813 390123AA	IMP,BASE-PLATE:SEC	1		N
	821 390140CA	PLT,FPC-A:PETP TO.125	1		N
	821 390141CA	PLT,FPC-B:PETP TO.125,ER-4100	1		N
9	842 343022AB	TAPPING,PH+,2,M3,L10:PH,2,L10,ZPC3	1		N

ASS'Y - KEY BOARD DISASSEMBLY ; MEMBRANE TYPE



ER-3715/4715/3615(60KEY)
 353 033055AAAA : FPC ASSY
 821 390140AA : FLT,FPC-A
 821 390141AA : FLT,FPC-B

ASS'Y KEY-BOARD DISASSEMBLY; FLAT TYPE



DRAWER

A. ASSY-BILL COIN

LO. NO	CODE NUMBER	DESCRIPTION/SPECIFICATION	Q'TY	REMARKS	RANK
A	2D902-701-077	ASSY BILL COIN	1	A5C4B	S
A	2D902-701-076	ASSY BILL COIN	1	A5C5B	S
A	2D902-701-079	ASSY BILL COIN	1	A8C4B	S
A1	821 390002AA	PLT, LEVER PRESS: ACETAL, BLK	4,5		N
A2	831 521006AA	COM, SPRING-LEVER PRESS: SUS-WH P10.3	4,5		N
A3	813 390014AA	IMP, HOLDER-LEVER PRESS: SUS-WH P10.3	1		N
A4	841 613008BB	MACHINE, SCREW, BH+, M3X6: NO, BH, +, M3, L6, ZP	3		N
A5	842 343008AB	TAPPING, PH+, 2, M3, L6: PH, +, 2, M3, L6, ZPC3, S	1		N
A6	813 390002AA	IMP HOLDER-LEVER PRESS: ACETIL, BLK	4,5		N
A7	821 390005AA	PLT, PARTITION-BILL: HIPS(HB)	4		N
A8	821 390003AA	PLT, BILL COIN-TILL: HIPS(HB)	1	5C5B, 5C4B	N
A8	821 390049AA	PLT, BILL COIN-TILL: ABS(BLK)	1	"	N

B. ASSY-TRAY

B	2D902-701-052	ASSY TRAY	1		L
B1	831 561002AB	LOCK, KEY-ASSY	1	LOCK-KEY : NO	L
B2	813 390036AB	IMP, PANEL-FRONT: SBC1 T1.0	1	LOCK-KEY : YES	L
B3	2D903 701 076	ASSY-SUB TRAY	1	BRD-A5502, A8402	N
	813 390025AA	IMP, SUPPORT-TRAY BRACKET: SBHG-1 T1.2	1		N
	813 390034AA	IMP, TRAY-TILL: SBHG-1 T1.2	1		N
	813 390053AA	IMP, BRACKET-SHAFT LOCK: SBHG-1 T1.5	1		N
	813 390055AA	IMP, SUPPORT-TRAY: SBHG-1 T1.2	1		N
	813 390056AA	IMP, SUPPORT-PANEL LH: SBHG-1 T1.5	1		N
	813 390057AA	IMP, SUPPORT-PANEL RH: SBHG-1 T1.5	1		N
	853 126001BB	NUT, HEX, 2-M6: HEX, 2, M6, -, ZPC3, SM20C,	1		L
B4	821 390062AA	PLT, SPONGE-TENSION: SPONGE(BRD-550)	2		S
B5	813 390096AA	IMP, ROLLER: DR-19-B1 P119	2		N
B6	27308-203001	PLAIN WASHER	2		N
B7	813 390025AA	IMP, SUPPORT-TRAY BRACKET	1		N
B8	841 514013BB	MACHINE SCREW, TH+, M4*8	2		N
	813 395000AA	IMP, SHAFT-LOCK: S45C P15.0	1		N
	841 213008BC	MACHINE, SCREW, FH+, M3X6: NO, FH, +, M3, L6, BL	1		N
	857 150008AG	MISCEL, RING, E, ID3, #3: ID3, OD7, TO. 6, BLACK	1		N

C. ASSY-HOUSING

C1	2D903-701-051	ASSY-SUB HOUSING	1		N
	813 390007AA	IMP, HOUSING: SBC-1 T1.0 DRAK BROWN	1		N
	813 390031AA	IMP, CHANNEL-LH: SBC-1 T1.6 DARK BROWN PI	1		N
	813 390032AA	IMP, CHANNEL-RH: SBC-1 T1.6 DARK BROWN PI	1		N
	813 390037AA	IMP, FRONT-PLATE: SBC-1 T1.0 DARK BROWN P	1		N
	813 390038AA	IMP, REAR-PLATE: SBC-1 T1.0 DARK BROWN PI	1		N
	813 390058AA	IMP, SUPPORT-CHANEL: SBC-1 T1.2 DARK BROW	1		N
C2	813 390096AA	IMP, ROLLER: DR-19-B1 P119	1		S

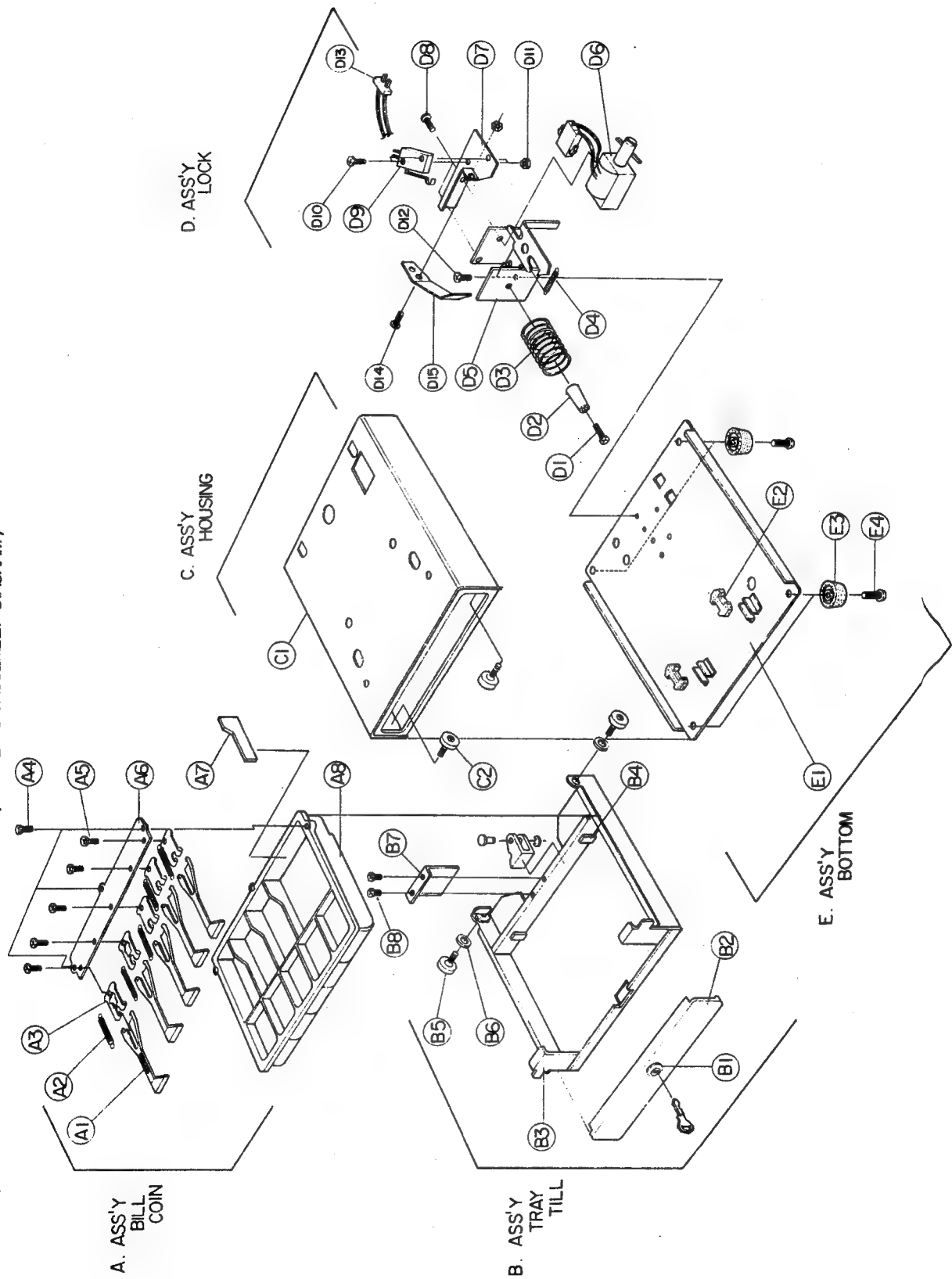
D. ASSY-LOCK

D	2D903-701-005	ASSY-LOCK	1	U.S.A.	N
D	2D903-701-004	ASSY LOCK	1	EUROPE	N
D1	841 314029BB	MACHINE, SCREW, PH+, M3X16:NO, PH, L16	1		N
D2	831 313007AA	COM, RUBBER BUMPER:NR BL(ERD-550)	0		N
D3	831 522004AA	COM, SPRING-PUSH:FZN BLK	1		N
D4	831 521005AA	COM, SPRING-LOCK LEVER:SILVER	1		N
D5	811 390003AA	SUA, BRACKET-LOCK ASS'Y:SBHG-1 T2.0	1		N
	813 390029AA	IMP, LEVER-LOCK:SCP1 T2.3	1		N
	857 110034AA	MISCEL, RIVET, SPECIAL:D4, L7.3, ZPC3, SUM24	1		N
D6	937 330003AA	MAG-SOLENOID , ASSY:ERD 550C	1	U.S.A.	N
D6	24793-700-101	DC-SOLENOID ASSY	1	EUROPE	N
	935 810916AA	CON-TERMINAL, PLUG, PIN:-, -, -, -,	3		N
D7	813 390017AA	IMP, BRACKET-M/SW:SBHG T1.0	0		N
D8	841 313008BB	MACHINE, SCREW, PH+, M3X6:NO, PH, +, M3, L6, ZP	1		N
D9	933 250034AA	SWITCH-MICRO, SIM-LEVER:125V, -, 5A, LUG, SP	1		N
D10	841 514028BA	MACHINE, SCREW, TH+, M4X15:NO, TH, +, M4, L15	2		N
D11	853 123001BB	NUT, HEX, 2-M3:HEX, 2, M3, -, ZPC3, SM20C,	2		N
D12	841 514013BB	MACHINE SCREW, TH+, M4*8	3		N
D13	955 390021AZAA	CBF-CONN ASSY, 150MM	1		N
D14	821 397005AA	PLT, RUBBER-STOPPER:NR BL(ERD-550)	1		N
D15	813 390028AB	IMP, SPRING PLATE:STSC304 TO.2	1		N
	821 391001AA	PLT, LEVER ASS'Y:DRAWER	0		N

E. ASSY-BOTTOM

E1	813 390035AA	IMP, BOTTOM-PLATE:SBHG-1 TO.8	1		N
E2	821 397005AA	PLT, RUBBER-STOPPER	2		N
E3	831 313006AA	COM, RUBBER FOOT	4		N
E4	841 514028BA	MACHINE SCREW, TH+, M4*15	4		N

(DRAWER DISASSEMBLY DIAGRAM)

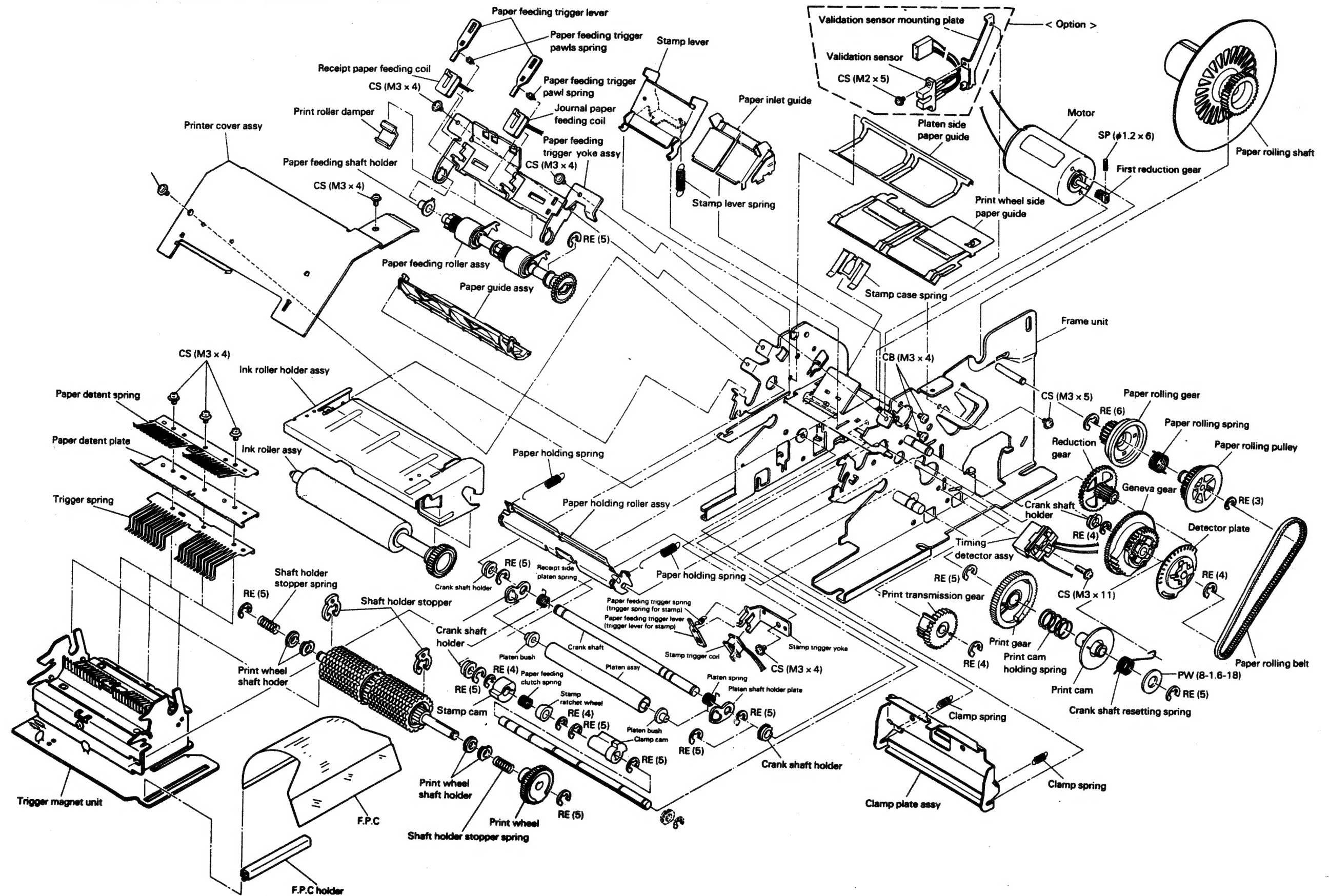


PRINTNR CR-802A/CR-802A

LO.NO	CODE NUMBER	DESCRIPTION / SPECIFICATION	Q'TY	REMARKS	RANK
	353 031104DAAA	PRINTER ASSY, WHEEL/2:CR-802A	1	ER-3715/4100	E
	353 031104CAAB	PRINTER ASSY, WHEEL/2:CR-812A	1	ER-3740/4715	E
	353 031104DAAB	PRINTER ASSY, WHEEL/3:CR-812A	1	ER-3615/3640	E
	29499-001-100	MOTOR/F705051010, A/S			E
	29499-001-110	C. B. SCREW/B010350111, A/S			E
	29499-002-120	MOTOR GEAR, F701007020, A/S			E
	29499-002-140	PRINT TRANSMISSION GEAR/F703209010, A/S			E
	29499-002-150	GENEVA GEAR/F703101010, A/S			E
	29499-002-160	PRINT TRANSMISSION GEAR/F701101020, A/S			E
	29499-002-170	RETAINING RING/B150300711, A/S			E
	29499-002-180	SPRING PIN/B130100816, A/S			E
	29499-003-060	TIMING DETECTOR ASSY/F701151000, A/S			E
	29499-003-070	TIMING DETECTOR PLATE/F705151010, A/S			E
	29499-003-080	CPU SCREW/B040302911, A/S			E
	29499-003-090	RETAING RING/B150300711, A/S			E
	29499-004-090	TRIGGER MAGNET UNIT A/F705201000, A/S			E
	29499-004-100	FLEXIBLE PRINTED CABLE/C702214010, A/S			E
	29499-004-110	F. P. C HOLDER/C702206020, A/S			E
	29499-004-120	TRIGGER SPRING/F705207010, A/S			E
	29499-004-130	DETENT PLATE/F701223021, A/S			E
	29499-004-140	DETENT SPRING/F701223080, A/S			E
	29499-004-150	PRINT WHEEL GEAR/F701220060, A/S			E
	29499-004-160	STOPPER SPRING/F701220060, A/S			E
	29499-004-170	PRINTER WHEEL SHAFT HOLDER/B230250230,			E
	29499-004-180	SHAFT HOLDER STOPPER/F701223040, A/S			E
	29499-004-190	CLAMP SHAFT, F705210010, A/S			E
	29499-004-200	CLAMP CAM/F701005020, A/S			E
	29499-004-210	CLAMP PLATE ASSY/F70100600, A/S			E
	29499-004-220	CLAMP SPRING/F701001070, A/S			E
	29499-004-230	CRANK SHAFT/F701225010, A/S			E
	29499-004-240	PRINT CAM/F701225020, A/S			E
	29499-004-250	PRINTER CAM HOLDER SPRING/F701225030,			E
	29499-004-260	CRANK SHAFT RESETTLING SPRING/F70122505			E
	29499-004-270	CRANK SHAFT HOLDER/F701225060, A/S			E
	29499-004-280	PLATEN HOLDER/F701225080, A/S			E
	29499-004-290	PLATEN SPRING/F701225080, A/S			E
	29499-004-300	PLATEN SPRING(R SIDE)/F701225090, A/S			E
	29499-004-310	PLATEN ASSY/F703241000, A/S			E
	29499-004-320	CUP SCREW/B040302311, A/S			E
	29499-004-330	PLATEN WASHER/B100161011, A/S			E
	29499-004-340	RETAINING RING/B150300811, A/S			E
	29499-004-350	RETAINING RING/B150300711, A/S			E
	29499-004-360	PRINTER WHEEL SET/130-03-1			E
	29499-005-270	PAPER FEEDING ROLLER ASSY/F705252000,			E
	29499-005-280	PAPER FEEDING FEEDING TRIGGER YORK ASSY			E
	29499-005-290	PAPER FEEDING COIL(J SIDE)/F70325030,			E
	29499-005-300	PAPER FEEDING COIL(R SIDE)/F70325040,			E
	29499-005-310	PAPER FEEDING TRIGGER LEVER/F703251050			E
	29499-005-320	PAPER FEEDING TRIGGER SPRING/F701251080			E
	29499-005-330	PRINT ROLLER DAMPER/F703251060, A/S			E
	29499-005-340	PAPER HOLDING ROLLER ASSY/F705253000,			E
	29499-005-350	PAPER FEEDING SHAFT HOLDER/F701252020			E
	29499-005-360	PAPER HOLDING SPRING/F703258010, A/S			E
	29499-005-370	PAPER GUIDE(PLATEN SIDE)/F701261010,			E
	29499-005-380	PAPER GUIDE(PRINT WHEEL SIDE)/F70126101		CR-802A &	E
	29499-005-390	PAPER GUIDE ASSY/F701008000, A/S		CR-812A	E

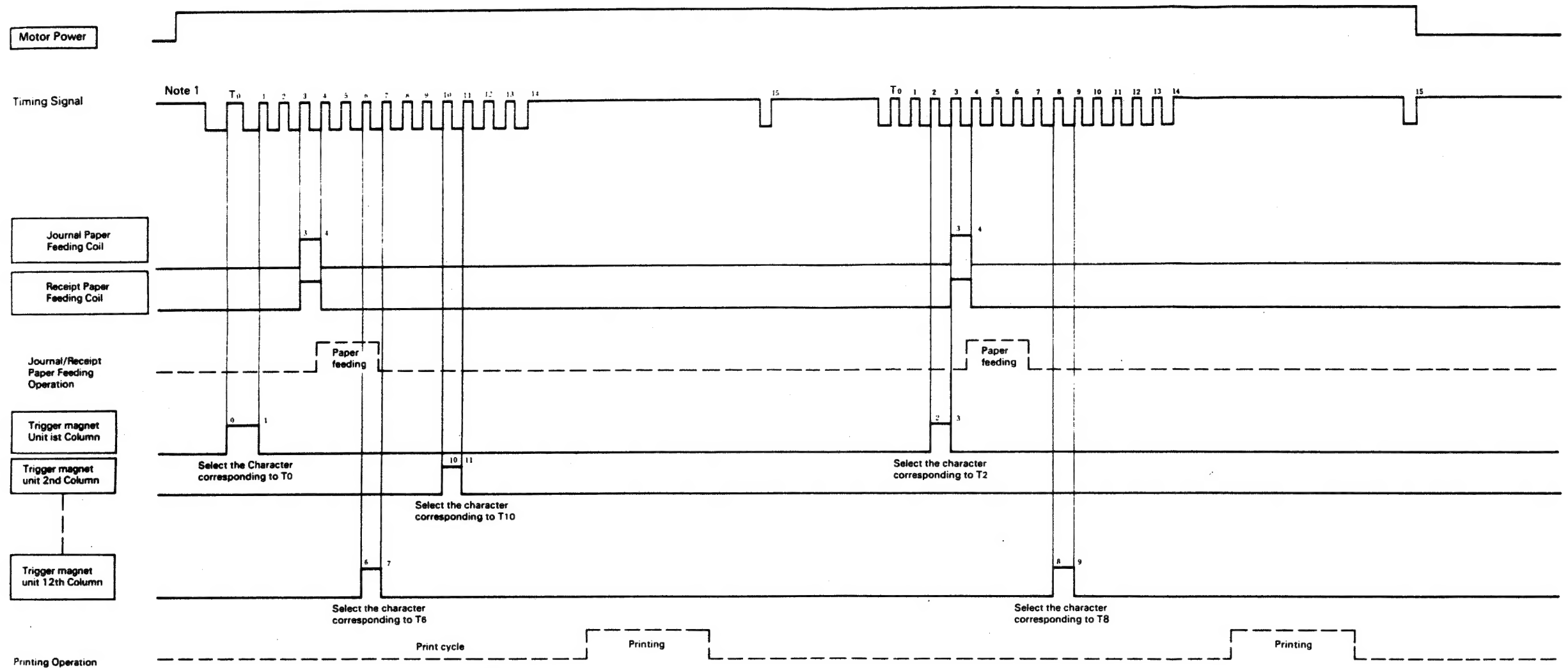
LO.NO	CODE NUMBER	DESCRIPTION / SPECIFICATION	Q'TY	REMARKS	RANK
	29499-005-400	PRINT ENTERING GUIDE/F705003010, A/S			E
	29499-005-410	PRINTER COVER ASSY/F705551000, A/S			E
	29499-005-420	ROLLER PAPER SET SEAL/F705552010, A/S			E
	29499-005-430	CUPSCREW/B040302311, A/S			E
	29499-006-070	INK ROLLER HOLDER ASSY/F705351000, A/S			E
	29499-006-080	INK ROLLER SEAL/F701353010, A/S			E
	996 711001AA	INK ROLLER ASSY(IR-92)			E
	29499-007-140	STAMP TRIGGER YORK/F703451010, A/S			E
	29499-007-150	STAMP TRIGGER COIL/F703451020, A/S			E
	29499-007-160	PAPER FEEDING TRIGGER LEVER/F703251050,			E
	29499-007-170	PAPER FEEDING TRIGGER SPRING/F701251080			E
	29499-007-180	PAPER FEEDING CLUTCH SPRING/F703210020,			E
	29499-007-190	STAMP RATCHET WHEEL/F701254011, A/S			E
	29499-007-200	STAMP CAN/F701005030, A/S			E
	29499-007-210	STAMP LEVER/F705451, A/S			E
	29499-007-220	STAMP LEVER SPRING/F701453020, A/S			E
	29499-007-230	STAMP CASE SPRING/F701452030, A/S			E
	29499-008-030	PAPER ROLLING BELT/F701009020, A/S			E
	29499-008-040	PAPER ROLLING PULLEY/F701004020, A/S			E
	29499-008-050	PAPER ROLLING SPRING/F701004030, A/S			E
	29499-008-060	PAPER ROLLING GEAR/F701004010, A/S			E
	29499-008-070	PAPER ROLLING SHAFT/F70301010, A/S			E
	29499-008-080	RETAING RING/B150300611, A/S			E
	29499-008-090	RETAING RING/B150300911, A/S			E
	29499-009-070	PAPER ROLLING PULLEY/F701004020, A/S			E
	29499-009-080	PAPER ROLLING PULLEY/F701004020, A/S			E
	29499-009-090	CUP SCREW/B040300311, A/S			E
	29499-009-100	CUP SCREW/B040302411, A/S			E

PRINTER ASSEMBLY/DISASSEMBLY DIAGRAM



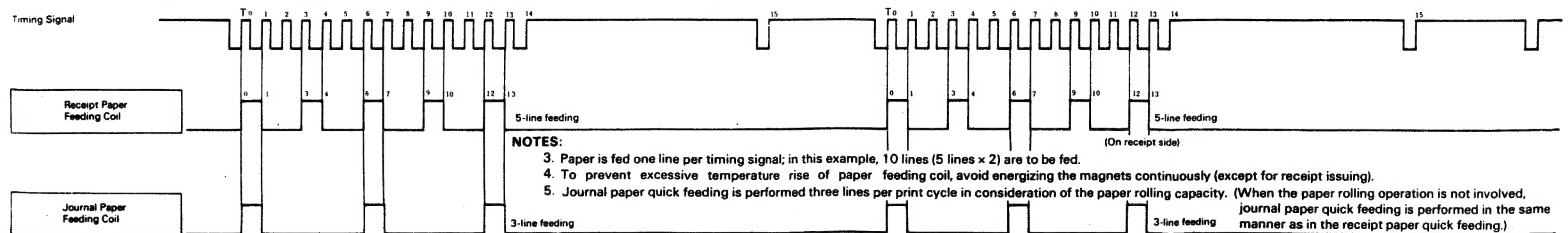
PRINTER TIMING CHART

(1) Timing Chart for Paper Feeding and Printing



- NOTES:**
1. When the motor has been stopped simultaneously with T₁₅ in the preceding print cycle, the timing signal appearing upon the next application of motor power is at HIGH level.
 2. At the start or end of energization of each magnet, the time delay from the rising edge of a timing signal must be not more than 0.5ms.

(2) Timing Chart for Quick Feeding



- NOTES:**
3. Paper is fed one line per timing signal; in this example, 10 lines (5 lines x 2) are to be fed.
 4. To prevent excessive temperature rise of paper feeding coil, avoid energizing the magnets continuously (except for receipt issuing).
 5. Journal paper quick feeding is performed three lines per print cycle in consideration of the paper rolling capacity. (When the paper rolling operation is not involved, journal paper quick feeding is performed in the same manner as in the receipt paper quick feeding.)

The signals enclosed in are to be provided by the user.